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THE JOURNAL-~~L~~ LANCET

Represents the Medical Profession of
Minnesota, North Dakota, South Dakota, and Montana
The Official Journal of the
North Dakota State Medical Association
South Dakota State Medical Association

Minnesota Academy of Medicine
Hennepin County Medical Society

Soo Railway Surgical Association
Sioux Valley Medical Association
North Dakota State Health Officers Association
Great Northern Railway Surgeon's Association

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THE TREATMENT OF HEART FAILURE*

By M. BARRON, M.D.

MINNEAPOLIS, MINNESOTA

I am going to discuss a problem this morning that is of considerable importance to the entire medical profession, because it happens to rank first and foremost amongst the causes of mortality and also of morbidity with which we have to deal.

I have some slides with which I want to illustrate the points that I am going to make. The incidence of heart disease is very great. We find that the mortality is almost twice as great as that of any other competitor in the list of causes of deaths. Apparently the treatment of heart disease is not easy.

(Slide). I have here several curves which show you the incidence of this disease by this black line. You will notice the mortality from heart disease as compared with the other lines which you can see as causes of death, for instance cerebral hemorrhage, and this can be included amongst the cardiovascular diseases because it is part of them.

In addition, we find on careful study of statistics, that most of the ten causes of death from

nephritis, as it is given in the mortality statistics, are perhaps wrong and greatly exaggerated. I think that the largest number of the deaths from so-called nephritis, which is put down as chronic interstitial nephritis, does not belong there but is a part of the hypertension syndrome, hypertension disease with congestive heart failure, producing albumin in the urine, and from that the diagnosis of nephritis is made.

(Slide). Here you see the figures and see how they are higher. This is from New York State. You see 247 in 1918 rising to 303 per 100,000 in 1926, and its next competitor is cerebral hemorrhage with 126, cancer with 121, nephritis with 121, pneumonia with 117, accidents with 86 and tuberculosis with 85. Notice how low 85 is in the series as compared with 303 for heart disease as causing death.

Here we see from Minnesota the records for 1928. Heart disease 150 per 100,000; cancer 106; pneumonia 66; nephritis 53; tuberculosis 53; influenza 39; diabetes 18. See how much higher heart disease is above all the others.

(Slide). In order that we may better understand the treatment of heart disease, it might be well to go over very hurriedly, as we are limited

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in time, what are the causes that lead to heart failure. Mainly we can classify the causes of heart disease leading to heart failure as three: Myocardial, endocardial, and changes in rhythm.

Under myocardial heart disease we have subdivisions. I can only name them; I am sorry I haven't time to explain them. Acute exudative myocarditis; toxic myocardium, that is the type that we find following acute infectious diseases, especially a disease like diphtheria; chronic myocarditis which practically does not exist at all, it is myocardial fibrosis associated principally with coronary disease, sclerosis of the coronary arteries; chronic adhesive pericarditis, a rare disease, rarely diagnosed correctly, and most of the time when diagnosed is found at autopsy to be incorrect; hypertension heart, that is the most important cause of heart disease we have to deal with.

In the mind of the laity, as well as of many of the doctors, when we mention heart failure and heart disease, we conjure up the picture of endocardial heart disease, valvular heart disease. That is not so. Only about twenty-five per cent of the causes of mortality from heart disease comes from valvular lesions. The others are principally myocardial, especially the so-called hypertension heart with or without coronary disease. Then we have coronary disease as the cause of death, either with or without hypertension. This sometimes causes death with congestive failure, and very often without congestive failure as when the patient dies from angina pectoris.

I think one of the greatest causes of death amongst our profession is myocardial from coronary disease without congestive failure, principally angina pectoris.

The thyroid heart plays some part in the production of heart disease. Many cases of heart disease are associated with hyperthyroidism, and the hyperthyroidism is masked by the condition found in the heart. They are treated as heart disease. After careful study it is found that the hyperthyroidism plays a very important part.

Samuel Levine very recently at the meeting of the American College of Physicians, in February, in Minneapolis, pointed out a group of cases that were treated as heart disease first, later diagnosed thyroid disease, treated for thyroid disease by Lugol's solution and also operative procedures, and the heart disease greatly improved and in some cases almost disappeared, simply from the treatment of the thy-

roid. So that hyperthyroidism definitely produced changes in the myocardium with myocardial weakness.

Myxedema heart is not so important as interesting. The myxedema heart is a heart that is something like an accordion. You can pull it out and contract it just by the method of treatment. Myxedema heart may come in with an enormously enlarged heart, with all the signs of decompensation. You put that patient on thyroid extract, and in a short time you will find that the heart will be of normal proportions. If you then stop the thyroid preparation, you will see the heart enlarged again and become a large, decompensated heart. This is practically the only kind of heart that will so improve under treatment that it will actually assume normal proportions in size. Ordinarily when we have an enlarged heart, the dilatation and the hypertrophy present is fixed, and although the symptoms of the patient may be greatly improved, the size of the heart is rarely changed. It generally remains large. Right heart failure is a rare condition associated with lesions in the lung.

(Slide). We come to the valvular heart disease that I mentioned as the second group. Endocarditis, principally rheumatic; chronic endocardial disease is principally rheumatic in origin. Bacterial endocarditis is of much less importance, and included in that is a very interesting group of cases, the so-called subacute bacterial endocarditis which is associated with embolic phenomena when we have cerebral accidents or infarctions of the organs.

Chronic valvular disease, nonrheumatic. That is a condition we find in elderly people. This is the type that is atherosclerotic, when we find atherosclerosis of the valve, probably not associated with rheumatism.

Dr. Clawson, of the University of Minnesota, says that rheumatic fever precedes the atherosclerosis. Then there is congenital heart disease. Then we have the syphilitic, and this is principally aortic. This aortic syphilitic lesion is one which can be differentiated from rheumatic, for instance, in that we have a pure regurgitation. There practically never is a stenosis present, because the lesion is due to changes in the media and gives us the so-called meso-aortitis luetica. This causes a weakness in the arch of the aorta. If it is far away it produces an aneurysm.

Disorders of rhythm are of very little im-

portance in and of themselves in producing heart failure. As a secondary cause they are important, especially auricular fibrillation. The fibrillation becomes important as a secondary contributing factor in the morbidity of the case.

Paroxysmal tachycardia is of very little importance.

Heart block sometimes produces death, and that may be through congestive failure.

(Slide). I have given you briefly the outline of the causes that might lead to heart failure. What is heart failure? Heart failure is simply that condition in which the heart as a pumping organ has lost its efficiency to properly propel the blood onwards, with the result that we have a deficiency in the amount of blood in the arterial system, and a concomitant increase on the venous side. That is all that heart failure signifies, an insufficient amount of blood propelled in the arterial system and a consequent increase in amount and in pressure on the venous side. All the symptoms which the patient presents in heart failure are a result of this condition.

What are some of the symptoms associated with heart failure that we have to treat? First, pulmonary stasis. Pulmonary stasis is found principally in mitral lesions. There it is most important excepting, of course, in the terminal stages. Then we have the symptoms of dyspnea, orthopnea, cough, hemoptysis, cyanosis, pain in the chest, congestion of the lungs as shown by the râles, and so forth.

The hemorrhages or the bloody sputum that we find in cases of congestive heart failure are brought about by two conditions: one, the congestion itself which causes ruptures of the capillaries in the lung parenchyma; second, embolic phenomena, infarcts in the lung. These infarcts are frequently present in cases of congestive heart failure.

Systemic stasis. The systemic stasis will give us congestion of liver, a large tender liver, distended jugulars, indigestion, nausea, vomiting, edema in different parts of the body, especially in the dependent part, ascites, and hydrothorax.

Symptoms of ischemia. As I just mentioned, in heart failure we have the two factors, a deficiency in the arterial blood and an increased amount in the venous blood. The above things are due to an increased pressure in the venous blood. Ischemia is an insufficiency in the arterial blood. This is associated principally with lesions of the aorta, valvular or hypertension.

What do we get? We get dizziness, faintness, pallor, precordial pain, cardiac asthma, anginal syndrome and psychosis.

This is just an introduction, because, after all, when a case comes for treatment and we have heart failure, especially congestive heart failure, the treatment is practically the same in all cases, no matter what the cause. It is of interest to know what the pathogenesis might have been to have brought about the condition present, but nevertheless the treatment is practically the same. We shall point out some of the side issues that have to be considered in the special treatment of special conditions.

Treatment. First and foremost is rest. No drug has yet been discovered that can compare with the efficiency of rest in heart disease, not only rest but prolonged rest mentally as well as physically. It must be complete. Worthy consideration of the comfort of the patient; the back rest. Don't keep the patient uncomfortable in the flat bed. If he is orthopneic, have him sit up in a recumbent position, because when a person strains he puts more effort and more work upon the heart. A commode at the side of the bed is very important in some of these cases. A few patients cannot use the bedpan with ease, and therefore, they will fight and struggle in the use of it. If you just have the patient handled carefully over to the commode at the side of the bed, you will improve his comfort and help him in his convalescence.

Sedatives. Sedatives in heart disease are very important. Restlessness means strain upon the heart. Don't be afraid to use morphin. Morphin is a very excellent drug in the care of these cases. It will stop some of the pains which they get in the chest from infarctions or from congestion, and it will also stop the restlessness. It is given in one-sixth to one-fourth grain doses. If the patient vomits, we might try pantopon.

For cough we give codein and cough mixture. For insomnia and restlessness we can use any drugs on the market. With some patients one drug works, and with others another drug works. We have the whole line, bromides, chloral, allonal, dial, cibalgine, veronal and phenobarbital.

We need say very little about diet in the treatment of heart disease. The only thing we must emphasize is that it should be a simple diet, it should be a bland diet. Do not give irritating foods or too much of the green, coarse vege-

tables, for the reason that we have congestion in the mucosa, and we have a gastric catarrh present. Generally give small meals. Feed them more frequently, if necessary, but don't overload the stomach to embarrass the heart.

In edema we restrict the fluids and the salt; the fluids are restricted for the first few days perhaps to 600 c.c., but you can't go on very long in that way. They become restless. We soon increase the amount to 800 and 1,000 c.c. The average that we give to patients is a little over one quart, from 1,000 to 1,500 c.c.

We always diminish the salts when there is marked edema present, because it alters the osmotic pressure in the tissues and salt is frequently retained.

We don't forbid tea and coffee entirely. We give them moderate amounts of tea and coffee because the caffeine does no harm. As you well know, sometimes we will restrict the tea and coffee which patients enjoy so well, and the next moment we will give them seven and one-half grains of caffeine sodium benzoate. There isn't much rationale in that type of treatment. We allow them small amounts of tea and coffee. We need not discuss alcohol; you can't get it anyway.

Regulation of the bowels: We don't use any drastic purgatives at any time. We use enemas and mild cathartics, simply not enough to produce any restlessness and distress in the patient.

(Slide). Now we come to the important drug therapy. In the drug therapy the most important element that we have is digitalis. It is the mainstay in the treatment of heart disease, and such excellent results are so frequently obtained through its use that I think it is worth while to go a little into detail to understand the mode of action of this drug and how it should be used. So I am going a little into detail in the use of this drug, digitalis, because all of us use it, and let us understand why we use it.

First, indications. When should we give digitalis? I want to emphasize the fact that no heart lesion per se indicates or contraindicates the use of digitalis; you can't say in a general way that in such cases you should or in such cases you should not give digitalis, excepting in a few points that I shall name presently.

When do we give it? Congestive heart failure. There is where it works the best. Heart disease with deficient circulation from any cause, whether the heart rate is rapid or slow. I want to emphasize that. You don't judge the

condition by the heart rate as to whether digitalis will be efficient or not. If we have congestive heart failure we should use digitalis and it will improve the circulation. Even if we find that the heart rate is not slowed, we can find the evidences of improved circulation by more efficient heart contraction.

The best results in the use of digitalis are obtained in auricular fibrillation and also in valvular lesions. Aortic regurgitation is not a contraindication. We used to think that in aortic regurgitation we should not give digitalis. Neither is hypertension a contraindication. In terminal stages there may be no effect because the heart has no more reserve force to mobilize.

In paroxysmal tachycardia we can use digitalis but it must be administered with caution. It may do harm if we have a case of ventricular tachycardia because it may produce ventricular fibrillation. In auricular flutter we may change the flutter to fibrillation and then with digitalis slow the rate. Sometimes the rhythm rights itself at this point. It may become regular or it may need to be followed with quinidin. I shall mention quinidin a little later.

An interesting trick in auricular flutter is to press upon the sinus caroticus which is situated below the angle of the jaw right over the carotid at its bifurcation. Pressure upon the sinus caroticus will produce a very peculiar, sometimes a dramatic result, in that there will be a complete cessation of the pulses. The heart will stop, and you certainly let loose then, because you think the heart has stopped permanently, but it does not. It soon starts beating again, and it will be regular and in a few cases it will become entirely normal and from a very rapid pulse will go down to the normal rate. In many of the cases it jumps back again to the flutter.

Pulsus alternans, the alternating pulse. Mackenzie says that a pulsus alternans when found gives prognosis to the patient of not more than three years, that is if the pulsus alternans is of any duration. Digitalis may benefit many cases with pulsus alternans. However, you must remember that digitalis in its toxic effect produces pulsus alternans, so you must know whether there was any pulsus alternans before you gave the digitalis. If it develops through the use of digitalis, stop it as once, because that is a sign of the toxic effect.

Ectopic beats, premature contractions, pulsus bigeminus or trigeminus: Give digitalis cautiously because, as you well know, these ectopic

beats or bigeminy or trigeminy are frequently the signs of digitalis intoxication. When these appear you must decrease the dose or stop the digitalis altogether. But if these ectopic beats are present before, and if they are associated with congestive heart failure, you can give digitalis, watching carefully that you don't increase the irregularity.

Disturbances of conduction: Here we have to be a little careful with the use of digitalis, for the reason that if we have the incipient type of heart block, that is there is only a delayed conduction, the giving of digitalis may change this delayed conduction to a complete heart block, and, of course, we want to avoid that. So in incipient cases of disturbances of conduction, we do not give digitalis. When we have complete heart block with decompensation, we do give digitalis, because we cannot increase the heart block which is already present, the complete heart block, and the digitalis will help and will give better contractions of the heart muscles and frequently increase the rate.

(Slide). In complete heart block we also give at times ephedrin. We have found recently that ephedrin increases the rate in complete heart block.

Contraindications to digitalis. (We will just go over them briefly because I have already mentioned them.) In incipient heart block, we should not give digitalis. In recent severe cardiac infarction from coronary disease we don't give digitalis. Nor in acute, severe, toxic myocardium as in cases of the diphtherial myocarditis. We have these cases quite frequently where there is marked myocardial degeneration from the toxin of diphtheria, severe acute and sub-acute bacterial endocarditis.

Let us take briefly the mode of action and the effects of the drug.

On the stomach, digitalis has a local irritant action helping to increase the nausea and the vomiting. Eggleston and his coworkers at one time claimed that the nausea and vomiting from digitalis therapy is mostly central in origin, and shows that we have saturated the heart muscles with the drug, and that it is brought out no matter what the route of administration is. Clinically I am quite sure all of you have had the experience that when you give the digitalis by mouth, especially if they have marked congestive failure with congestion of the stomach and the intestines and enlarged liver, the patient may start vomiting more intensely, and if you change

the therapy from the mouth to giving it by rectum, this nausea and vomiting disappears. So it has definite irritative effect upon the stomach, producing anorexia and vomiting. But we must not forget there is stimulation of the vomiting center.

Subcutaneously, tincture of digitalis produces local pain, swelling and abscess formation.

Mode of action on the heart. In auricular fibrillation (that is the type of heart disease that responds best to digitalis therapy) it is valuable, and it is well to remember its beneficial effect because this condition occurs in from 30 to 40 per cent of cases of cardiac decompensation. The heart rate is slowed by blocking,—reducing the number of impulses which reach the ventricles from the auricles. That is the very important effect of digitalis. It blocks the number of impulses that reach the ventricles, and therefore the rate is slowed.

Digitalis retards conductivity of the junctional tissues between the auricles and ventricles through stimulation of the cardio-inhibitory mechanism, the vagus, and through direct action on the conducting tissues. That is the way it slows conduction, by acting through the vagus and directly through the conducting tissues.

The circulation is improved mainly through the slowing of the heart rate. That is how we get our beneficial effects in auricular fibrillation, through the slowing of the heart rate. The heart can fill better. It contracts and fills and increases the volume output two or three times when we do that.

How does it act in nonfibrillating hearts, in cases of cardiac decompensation? In nonfibrillating hearts the beneficial effect is much less pronounced. The chief effect is through the delayed conduction and the inhibitory effect upon the pacemaker, the sino-auricular node. The heart contracts more fully with better emptying through the increased irritability of the muscle fibers. The muscle fibers of the ventricles are more irritable; therefore they contract more fully and empty the heart better. The systolic contraction becomes more rapid and complete and the diastole more prolonged. These effects are obtained, also, in the fibrillating heart. So in addition to the beneficial effect of digitalis in auricular fibrillation through slowing the number of impulses, these effects that I have mentioned here are also present, but they are not of so great importance.

(Slide). Action on the blood vessels is of

practically no importance. Therefore, any degree of hypertension is no contraindication to the use of digitalis. Action on blood pressure is practically none. In fact, sometimes the blood pressure is reduced after you administer digitalis in decompensated hearts.

The effect on the kidneys is very important. We all know that when we have a marked decompensated heart with congestive heart failure, if we give an appropriate dose of digitalis, there is a large amount of urine excreted. How is that effect brought about? It is not through the action of the kidneys. Compensated hearts never respond with the diuresis, no matter how much digitalis you give them. In decompensated hearts you can get an enormous diuresis.

Very recently I had a case of cardiac-decompensation associated with hypertension in which the appropriate administration of digitalis caused, on the third day, that patient to excrete 9,000 c.c. of urine with an intake of only 1,000 c.c. of water. So you see the enormous effect. How was that brought about? Only through the improvement of the circulation. When we have congestive heart failure with cyanosis, there is a deficiency of oxygen, a partial anoxemia in the blood, an increase of carbon dioxide through the stasis. This acts upon the kidney parenchyma, causing degeneration, causing a smaller amount of urinary output and the output of albumin. If we increase the circulation so there is a more rapid rate, we bring more oxygen to the tissues and a lesser amount of carbon dioxide, and we have this very beneficial effect of the diuresis.

We have practically no effect upon the nervous system except the effect I have mentioned upon the vagus, in slowing the heart action.

Toxic effects. Some patients are very hypersensitive to the drug, others can stand enormous amounts of it. You have to treat each case, depending upon what its reaction will be. The Eggleston dose is of value only that it gives you an average idea of about how much a patient can stand over a period of time, but the cases vary.

What are the toxic effects by which we can recognize that we are giving too much digitalis? Anorexia, nausea and vomiting, partly local, partly central.

Premature beats, pulses bigeminus and trigeminus. When you get this, you should stop or decrease the amount of digitalis used. It shows the toxic effect is developing; it is past satura-

tion. Pulsus adterans is of very serious importance and means that you should stop the digitalis as once and then start again with small doses.

Disturbances of conduction. That is when you have the P. R. interval increase that you are getting the toxic effect. Either reduce the amount or stop it for a time, and then go to smaller dosage.

Visual disturbances. Some patients complain of seeing peculiar lights, red, green, different colors of the rainbow at the margin of the field of vision. That is an effect of the drug.

Anuria is of serious importance. That means the circulation is made worse rather than improved, and digitalis must be stopped.

Ventricular tachycardia is of very serious importance if produced by digitalis. The extra irritability of the heart muscle produces ventricular fibrillation, and of course that means death, and that is the last item we have down there.

Now the dosage. How should we give digitalis? In order to be effective, the dosage of digitalis must be large. We find cases where digitalis is given five and ten drop doses three times a day. If the patient has not had digitalis before, the administration of such small amounts of digitalis is perfectly useless. You might just as well give him so much physiological salt or distilled water. We must give sufficient digitalis to saturate the heart muscles, in order to produce a proper effect upon the conditions that I have already mentioned. How should we give it? If the patient has had digitalis before you have to take that into consideration and go a little slowly. If the patient has not had it before, we then give large doses, four, six or even eight c.c. in the first dose. These large doses I always give by rectum, after giving the patient a cleansing enema. What does that mean, four, six or eight c.c.? You must remember that a drop of digitalis is very much smaller than the minim. If you give fifteen minims of digitalis, that is a measured quantity in a glass, that represents 1 c.c., but fifteen drops of digitalis represents only one-third c.c. If you will measure the drops that come out of the dropper in a cubic centimeter glass you will find that it takes all the way from 30 to 40 drops to make one c.c., so that when we give 6 c.c. we are giving not 90 drops but we are giving 180 or 270 drops, rather, almost three times as much.

So you see that the dosage must be very large. We give that as the first dose.

Then after that we give from two to four c.c. four hours later and watch the patient and the pulse. Following that amount, when we have already given the patient about twelve c.c. in the period of from eight to twelve hours, we then give two c.c. every six hours until we bring the pulse rate to where we want it, down to 80 or 90 per minute, instead of its previous 130 to 160 per minute. When we reach about 80 or 90, we then go more slowly. We like to get the pulse rate down to about 60 or 70 because at that rate, even when fibrillating, the heart has the best blood output.

After we have reached that dose, we then give a supporting dose, and the supporting dose on the average is from one to two c.c. a day; then we watch the pulse rate, so that we give rather large doses.

The next drug that I want to discuss is quinidin. Most of us are a little afraid of the usage of quinidin in heart failure. Why are we afraid? Because we realize there are two conditions that produce thrombosis in the auricles. Thrombosis, blood clots in the auricles, are brought about either by cardiac decompensation or auricular fibrillation, and a compensated heart without fibrillation very rarely produces thrombosis in the auricles.

We argue, if it is true that fibrillation produces thrombosis and especially when associated with decompensation, why should we try to make such a heart regular because when the heart is fibrillating there are no contractions of the auricles? If we have a loose thrombus there and we give the patient quinidin, and the patient should respond to the quinidin, and the heart should become regular, the auricles will start contracting. When the auricles start contracting, what will happen? They will then break loose some of the thrombi and produce embolic phenomena such as apoplexy or infarcts in the kidneys and spleen or embolism in the lungs, if it is on the right side of the heart. It is a thing we must remember in the use of quinidin.

But remember that auricular fibrillation predisposes the case to thrombosis. If we can take any case of auricular fibrillation and through proper therapy make that a regularly contracting heart, such a heart will not be predisposed to fibrillation, and therefore we will prevent apoplexy through that medium. It is true in our

large series of cases at the General Hospital in Minneapolis, we find constantly patients coming in with hemiplegias of various kinds, in cases of auricular fibrillation, simply as a result of the auricular fibrillation without any relation to quinidin. We have had practically no cases, that I know of, of embolus, infarction or hemiplegia, that is infarction of the brain, through the use of quinidin because we made the heart regular. So that although we have to remember the dangers of the use of quinidin, we must remember that if it is a type of case that can be made regular through quinidin, we probably will do that patient more good by taking away the predisposition to thrombosis formation in the auricles. As to that we use quinidin a good deal. In about 50 per cent of the cases we get the hearts regular again for a greater or longer period.

How do we administer quinidin? We give quinidin like this: We start with a very minute dose to find out whether the patient is sensitive, because many patients are sensitive to quinidin, and they get all kinds of reactions, tinnitus aurium, rashes and what not. We give three grains. If the patient shows signs of toxicity, that patient cannot take quinidin. If he does not show signs of toxicity, we then increase the dose. What patients do we give quinidin to? We never give quinidin in cases that are still decompensated. We always must compensate the patient first through rest, through digitalis and through other methods that we have, before we give them quinidin. We use quinidin only to reëstablish the rhythm in cases that are already compensated.

What dosage do we give? We start in and increase the dose that we give, the first day three grains, the second day six grains, and two hours later three grains more. Then we give them six grains, six grains and six grains; six grains every hour or two until we reach a maximum amount of from 50 to 60 and in some cases 80 grains a day. Most cases become regular when we have reached from 30 to 40 grains of quinidin. If they don't become regular with 60 or 80 grains, there is no use going any further, because you will have a difficult time in keeping that heart regular with quinidin afterwards. The reaction is quite striking. All of a sudden, from an irregular beating heart, the heart begins to beat in the normal regular rhythm without skipping.

After we have made the heart regular we then

give them a supportive dose of from three grains three times a day up to five grains three times a day. Many cases go on for months and some of them for years without reverting back to fibrillation.

Strophanthus is used very little in America. In France it is used a great deal. There it is called ouabain. We use it in emergency cases where we want a rapid effect. We then give 1/240 of a grain intravenously or it may be given in doses of two or three milligrams by mouth.

Euphyllin is very valuable for vasodilatation of the coronary arteries. We use it in cases of severe hypertension, especially those associated with coronary disease. It seems to be one of the best drugs for dilating coronary arteries. Remember it can dilate only coronary arteries that have a functional activity, so it depends upon the condition of the arteries as to what type of effect you will get in cases of angina pectoris. We give it generally in one-tenth grams, (one and one-half grain tablets) dissolved in water, four, five or six times daily. Sometimes in cases of Cheyne-Stokes' respiration, we find that if we give seven and one-half grains hypodermically, the Cheyne-Stokes will be markedly relieved.

Caffein sodium benzoate is a valuable drug for both heart and respiration. The reaction is of shorter duration, but it is very valuable. We give it in three, four, five and seven and one-half grain doses subcutaneously. I often combine strychnin with it, from one-twentieth to one-thirtieth of a grain of strychnin to each dose of the caffein sodium benzoate.

Iodids. We don't use iodids very much more in heart failure or arteriosclerosis or in hypertension. We don't find they are of very much value. We used to think iodids were valuable. We believe that iodids are of value only in luetic hearts where we have the meso-aortitis luetica, or any conditions of the heart and blood vessels associated with lues.

Nitrites. The nitrites are valuable drugs for temporary and quick relaxation of spasms of the blood vessels, amyl nitrite, sodium nitrite, nitroglycerin and erythroi tetranitrate.

In cases of angina pectoris where patients complain of severe pressure in the chest that seem to be associated with spasms, perhaps, either in the aorta or coronary arteries, I advise them to carry nitroglycerin tablets, one-hundredth of a grain, and at the first onset of the attack to put one under the tongue and repeat every five minutes for as many doses as

necessary, either to ward off or help ameliorate the attacks. Most patients get relief; some do not.

Diuretics. Diuretics in congestive heart failure with edema are sometimes valuable, and there is a large number of them. We use diuretin, which is theobromin sodium salicylate. Lately I have been using theocalcin. I think it works a little better in some cases as a diuretic. We also use theocin and any of those drugs in about five-tenths gram or seven and one-half grain doses three, four or five times a day.

Speaking of diuretics I must mention some of the newer drugs, novasurol and salyrgan. Those were discovered by Saxl working in the Vienna Clinic. These drugs are mercury compounds. You must avoid giving them in cases in which there is kidney disease, or any signs of degeneration of the kidney through the large number of granular and hyaline casts. Therefore, never give them in edemas of true nephritis. Give them in cases of congested kidneys where you have only albumin present. Large amounts of albumin without casts do not preclude the administration. The efficiency is sometimes most remarkable. We can sometimes make the patients excrete from four, six to eight liters a day over several days. We find that the administration of ammonium chlorid or ammonium nitrate, about 100 grains a day, at the same time that we give novasural or salyrgan, increases the efficiency of the diuretic. In one case I had I gave the patient 100 grains of ammonium chlorid over a period of two or three days and then gave the novasural; I dehydrated the patient and threw the patient into acidosis, and I had to give large amounts of hypodermoclysis to get the patient back again. It simply shows the profundity of the diuretic effect in some cases by the use of these drugs.

Lately I have been using salyrgan more than novasurol because it seems to be just as efficient as a diuretic and less irritant on the kidney parenchyma.

Other methods. Phlebotomy. Don't forget phlebotomy in congestive heart failure. When a patient is brought in and shows the vessels of the neck distended, marked congestion with cyanosis, marked dyspnea, breathing with great difficulty, in many of these cases during those critical periods by removing blood from the vein we might carry the patient over this crisis which otherwise might end him. You must remember,

though, that when you do a phlebotomy and remove blood you will get no results unless you remove a sufficient amount. The removal of one ounce or two ounces or 100, 200 or 300 c.c. of blood is practically of no value. You must carry it beyond a point where it will decrease the work of the heart, and you must remove not less than 450 or 500 c.c. and it is generally better to remove 600 or 700 c.c. of blood. You will find some very remarkable results in some cases. The next morning you may find the patient much less dyspneic and much less cyanotic, and you have a chance to use other methods to bring about compensation.

Removal of edema helps in some of these cases because it embarrasses circulation. So the use of the diuretic I have mentioned, or through paracentesis of the chest or peritoneum, might help the patient in his recovery from the decompensation.

Antiluetic treatment in cases of lues, but beware. Start in with very minute doses. Sometimes it is better to start with bismuth or mercury and later with minute doses of the arsenicals for the reason that if you give a large dose of arsenicals suddenly you may produce the so-called Herxheimer reaction.

I have already mentioned the hyperthyroid heart. Use Lugol's solution. Some cases get well without operation. Many cases have to be operated on and have a thyroidectomy.

Myxedema heart. We get most remarkable results in these cases through the use of appropriate doses of thyroid extract.

The importance of carefully graduated exercise during the convalescence. This is a very important subject in itself. I want to impress upon you that in the treatment of heart disease, when you have a case come to you in complete decompensation and you put him to bed and give him appropriate doses of digitalis and perhaps later on quinidin, to straighten out a heart that is fibrillating, and you get him up and around and have him walk around the room, you say "Fine, here is a patient that was completely decompensated. I am sending him out of the hospital as a man able to go about again and join the community." That is a great danger that many of us fall into in the treatment of heart disease.

A very important part of the treatment of heart disease is not what I have just given, but lies in the prevention of recurrent attacks of decompensation. The patient must be instructed

in great detail as to what he should do as well as what he should not do. He must be taught to increase the amount of exertion very gradually, so as to strengthen the heart. If this is done carefully he may later be able to do work within certain limits and thus make himself again a useful member of the community.

AGRANULOCYTOSIS

In the case of agranulocytosis reported by STEWART R. ROBERTS and ROY R. KRACKE, Atlanta, Ga. (*Journal A. M. A.*, Sept. 13, 1930), blood counts were made throughout its course, including a second attack. There was complete disappearance of the granulocytes from the blood stream two days before the clinical onset and their reduction to only 10 per cent four days before the clinical onset. The marrow before the clinical onset had ceased the manufacture of the granulocytes. The marrow evidently passes through a period of dysfunction to complete afunction in a case presenting total absence of the polymorphonuclears. But the primary lesion, the primary dysfunction, the primary afunction is in the myelocytic division of the marrow even before the clinical onset. The disease exists in the bone marrow before it appears in the blood stream and in the blood stream before it appears clinically. The disease has, therefore, three onsets: a marrow onset, a blood stream onset and a clinical onset. In the author's case, on May 18 came the first gross drop in the polymorphonuclears in the blood stream in the second attack. This was the blood stream onset. The marrow onset evidently came from three to five days previously when the marrow stopped manufacture. The clinical onset came, May 21, four days after the blood stream onset and six or eight days after the marrow onset. Counting the life of the leukocyte at four days, it would seem that, measured by the events of the second attack, the period of collapse occurred eight days after the marrow had ceased to deliver the finished products to the blood stream, and four days after they had begun to disappear from the blood stream. The case reported affords evidence, if not proof, that the marrow loses its power to make granulocytes for some days before the development of a sepsis.

PREGNANCY AND LABOR COMPLICATED BY GRANULOMA INGUINALE

LESTER A. WILSON, Charleston, S. C. (*Journal A. M. A.*, Oct. 11, 1930), reports the analysis of fourteen cases. It seems that there is a tendency to stillbirth and death of infants in granuloma inguinale. Granuloma inguinale is not of venereal transmission, as none of the husbands of these patients were diseased. The Negro race is far more susceptible than the white race. Under the influence of pregnancy the disease progresses rapidly, probably owing to the congestion of the parts; after labor the condition tends to improve. This series of cases shows that the uterus if not traumatized or infected by handling can take care of a great deal of infection.

INTRAVENOUS UROGRAPHY*

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The idea of visualizing the various hollow viscera of the body by rendering them opaque through the introduction of foreign substances followed rapidly the discovery of the Roentgen ray. For study of the urinary tract, catheters or bougies impregnated with metal were passed up the ureters, and their course and the positions of the kidneys relative to them were demonstrated. In the occasional case of misplaced kidney or other congenital anomaly such information was useful, but in the average case it gave little help, except when the catheter was seen to lie close to or in direct approximation with a shadow that, from a history of colic, was suspected of being a calculus. It became evident that some shadow casting mediums that would not irritate the renal pelvis or bladder would be required before great assistance in diagnosis could be expected.

Klose, in 1904, who had outlined the alimentary canal with bismuth, attempted the same procedure in the urinary tract. However, the shadows obtained were uncertain and it was most difficult, if not at times impossible, to remove the particles of bismuth injected.

Two years later von Lichtenberg and Voelker tried colloidal silver in place of bismuth and found that it gave a clear outline of the bladder. Then von Lichtenberg had injection made into his own renal pelvis, and so demonstrated the practicability of the method. When only the pelvis and calices of the kidney were subjected to injection, the resulting plates were referred to as pyelograms. However, as the method improved, the ureters became better and better outlined, and so ureterograms were added to the pyelograms. Ultimately the entire urinary tract was rendered opaque to Roentgen rays and urography became the chief aid in the diagnosis of disease of the urinary tract.

It was not long before it was evident that colloidal silver, if injected into a diseased kidney

that did not readily empty, caused irritation. Minute abscesses were found to form about the suspended, microscopic particles of silver. Search was then made for a nonirritating solution that would cast a sufficiently dense shadow.

Such a solution was brought forward by Burns, in 1915, who demonstrated the practicability of a neutral solution of thorium nitrate and sodium citrate. Its comparative freedom from untoward effects, as compared with the various suspensions and emulsions of the silver salts, led to its general adoption. However, it was expensive, and if kept too long it tended to become toxic. Therefore, when Cameron, of the University of Minnesota, in 1918, proposed sodium or potassium iodide it was rapidly adopted by urologists, the number of whom was destined to increase tremendously in the following year, as discharged medical officers decided their army training best fitted them for this specialty. However, it was soon found that, although the normal urinary tract could very easily be rendered opaque by ureteral catheterization and injection of sodium or potassium iodide, it was not easy to catheterize ureters which opened into a badly infected and inflamed bladder, even after the patient had been given a local or general anesthetic and indigocarmine had been injected intravenously.

In fact, the entire profession wished for some drug, that, given intravenously, would be secreted by the kidneys in sufficient concentration to cast an appreciable shadow and so outline the pelvis and calices. The oldest urologists doubted if it would ever be found, for the halogens seemed to be the only chemicals of sufficient molecular weight available, and they were considered far too toxic in any combinations then known. The story of the solution of this problem has to me been most engrossing, and I hope that in the telling of it I can convey some of the disappointment and some of the thrills to which it has given rise. Especially I hope that I can give emphasis to the fact that today scientific progress is the contribution of many, and that if the in-

*Read before the Huron District Medical Society and the Huron Dental Society, Huron, South Dakota, October 20, 1930, and the Wisconsin Urological Society, Madison, Wisconsin, November 21, 1930.

dividual attempts to claim too much, time and history rapidly render his claims futile.

Osborne in 1923, working in the Section on Dermatology of The Mayo Clinic, was giving large doses of sodium iodide in the treatment of some skin diseases. In reporting his results he stated that so great an amount of sodium iodide was administered intravenously, that it was eliminated in the urine in sufficient concentration to give a recognizable cystogram. Rowntree, who years before had done with Geraghty the early clinical work on phenolsulphonephthalein, thereupon suggested that still larger doses be given in an endeavor to make the renal pelvis cast a shadow as well as the bladder. The dose was increased until this occurred, but the dose proved to be too great for practical purposes and the shadows cast were not of sufficient density to be of diagnostic aid, except in exceptional cases. But to Rowntree and his coworkers, Scholl, of the Section on Urology, and Sutherland, of the Section on Roentgenology, must be given the credit for first demonstrating that urography, by intravenous injection of opaque substances, was feasible.

After their publications, European urologists attempted to make the procedure practical. Von Lichtenberg and Rosenstein, by injecting oxygen around the kidney, tried to increase the distinctness of visualization, without practical results. Roseno, by combining sodium iodide with urea, attempted to increase its concentration in the kidney and hence add to the density of the shadow cast. But the compound proved too toxic in many cases to be employed generally.

Hryntschak, in 1928, at a congress in Vienna, reported being able to visualize the urinary tract by intravenous injection of some substance the nature of which he kept secret. He published his work with illustrations in the *Zeitschrift für Urologie* in 1929, and demonstrated visualization of the urinary tracts of both animals and human beings. The suppression of essential facts from his publication rendered his work unsuitable for scientific evaluation. It has since been asserted that the drug he used was one of a group of substances synthesized by a chemist, Binz, and his assistant, Rath, of Berlin; that from 1921 to 1927 these materials were known to them as the selectan group of substances and that Binz had hoped that they would be of some value as a urinary and biliary antiseptic when they were given intravenously.

Binz supplied Lichtwitz, of Altona, Germany,

with some of these drugs to determine their effect in infections with cocci of the biliary and urinary tracts. Therefore, when Swick, an American graduate medical student studying in Germany on a Libman Foundation fellowship, came to his clinic, Lichtwitz assigned to him the task suggested by Binz of testing the germicidal properties of the selectan group of drugs.

In reporting the work, Lichtwitz wrote, "On the basis of these experiments and of our relatively extensive experience regarding the lack of untoward effects of the preparations by peroral and intravenous administration, the application of the selectans as contrast mediums appeared promising. Dr. M. Swick of New York has carried out these trials. To him we owe the uroselectan method."

The results on patients were promising but the properties of the compound used were not entirely satisfactory. As the clinical facilities at Lichtwitz' clinic were limited, Lichtwitz advised Swick to go to Berlin, where he could be in closer communication with Binz and could have the facilities of von Lichtenberg's clinic, the largest urologic clinic in Europe, and probably in the world.

Von Lichtenberg expressed great interest in the results already obtained, encouraged Swick to proceed, and placed the necessary facilities at his disposal. Conferences with Binz led to the systematic trial of other substances of the selectan series. The compound which gave the best visualization and which had the least toxicity was named by von Lichtenberg "Uroselectan" after his return from America, where he had been the guest of the American Urological Association during the summer of 1929, while Swick had been carrying on the experimental work at his clinic.

On von Lichtenberg's return, the drug was applied to several hundred patients, so that by the autumn of 1929, Swick was able to read an account of his scientific results before the Urological Congress in Munich, and von Lichtenberg, at the same meeting, gave a paper on its clinical application.

Before the drug was placed on sale in America it was distributed gratis to twelve urologic clinics through the secretary of the American Urological Association. At their 1930 meeting, the results of its use were reported by America's leading urologists, together with a report of more than 700 cases by von Lichtenberg and a summary of the chemistry of the drug by Binz. Swick, although an American, was not on the program of the American Urological Association.

However, he had an opportunity to present his work before the American Medical Association a month later at its meeting in Detroit. A most exciting and interesting discussion by Binz and Lichtwitz followed.

Swick described his technic approximately as follows: The preparation, which is a powder that is 40 per cent soluble in water, is prepared for use by dissolving 40 gm. in 100 c. c. of sterile distilled water. This is twice filtered and is sterilized by autoclave, or water bath, as is any solution for intravenous injection. The material is supposed to contain 42 per cent of iodine, and it has left the circulation four hours after injection in cases in which renal function is good.

Administration is intravenous and is carried out with the solution at body temperature at the time of injection. The patient's face immediately becomes flushed, and tachycardia and palpitation occur. Patients experience a feeling of general warmth, and in more than half of the cases they will complain of pain in the arm, near the shoulder, which they describe as a feeling that the arm is bursting. There is usually considerable dryness of the throat, and thirst, but water is withheld in order that the drug may be secreted in concentrated form. The symptoms usually pass within ten minutes. Occasionally nausea and vomiting take place, and urticaria has been observed. Symptoms resembling acute iodism, manifested by lacrimation, sneezing, and dyspnea, have occurred, but such reactions always have been transitory and delayed reactions never have been observed. After ten minutes from the onset of injection, untoward symptoms never have developed.

Roentgenograms are taken fifteen to twenty minutes after injection, and again thirty to forty minutes after the first roentgenogram. Before the second roentgenogram is taken the bladder is emptied in order that the shadow of the drug in the bladder will not obscure the lower parts of the ureters. If the first plates show that but little of the drug has been secreted, it is presumed that the kidneys are functioning poorly, and several hours should be allowed to elapse, during which roentgenograms should be made at intervals. Impairment of renal function will allow but poor concentration of the drug in the bladder and practically none in the kidney; many hours are required for its secretion.

In discussing Swick's paper Binz explained that the reason for the nontoxicity of uroselectan as compared with sodium iodide, although uro-

selectan contains 48 per cent of iodine, was that sodium iodide is an inorganic compound whereas in uroselectan the iodine is combined in an organic compound. Because of this, the compound of iodine is excreted by the kidney undestroyed, and it is possible to recover 98 per cent of it from the urine a few hours after injection.

The chemical world previously had supposed that organic as well as inorganic iodine would result in acute iodism. Binz prophesied that in the next few years the profession will be flooded with different compounds of iodine for intravenous use, not only for urographic work but for use in all types of disease. So rapidly do we advance that this prophesy, made at the beginning of this summer, is already seeing fulfillment in that uroselectan is being replaced by a similar drug called "Skiodan," which is the iodomethanesulphonate of sodium and has 52 per cent of iodine instead of 48 per cent; a 4 per cent solution is isotonic with blood. A smaller amount has to be injected, and the recipient does not experience the mild reactions referred to after the administration of uroselectan.

And so the separate work of Binz, Swick, Lichtwitz, and von Lichtenberg, appears each in its true place. They were individual contributors, each of whom made possible the next man's work, and the work of all of them together will result in the use of still more superior products, such as, perhaps skiodan.

The greatest field of usefulness for urography after intravenous injection of opaque substances, is in those cases in which the fact of the presence or absence of a second kidney is in doubt, because only one ureter can be found by cystoscopic examination or because retrograde injection of one ureter is prevented by stone or stricture. In such a case, if the kidney on one side becomes visualized after intravenous injection, and a pelvic outline is not seen on the other side, one is reasonably sure of the absence of, or of the extremely poor function of, the kidney on the latter side.

Good visualization occurs, not only as a result of good renal function, but also secondarily to urinary retention. Therefore, a dilated renal pelvis or ureter usually will be well outlined, although the function may be greatly impaired. This fact lessens considerably the usefulness of the drug in determining renal function by visualization. Its usefulness is lessened also by the fact that in many apparently normal cases, visualization of the renal pelvis is poor; this is hard to explain, for in a similar case in which injection

is done with the same technic visualization may be good. Undoubtedly much improvement will be noted in the drugs and in their application in the course of the next few years.

As a substance for injection into the renal pelvis through the ureteral catheter, for purposes of pyelography, these organic compounds of iodine, in the same dilutions as those used for intravenous injection, have proved the best materials yet developed and seem certain to replace sodium iodide, as the latter replaced thorium. Because they are free from toxic effect, bilateral pyelograms can be made. If pyelovenous backflow occurs, the drug does not cause bodily reaction, and if retention in a hydronephrotic sac is discovered, irritation such as that which resulted from sodium iodide does not occur.

It is doubtful if urography after intravenous injection can replace cystoscopic examination except in individual cases however much the patient might so desire. Knowledge of the amount of infection in each kidney and determination of separate renal function, and of the condition of the vesical mucosa are all bits of information which are frequently indispensable and urography, after intravenous injection, does not give this information. It does not seem likely that any substance injected into the vein will ever cast as deep or satisfactory a shadow as the same substance injected directly into the renal pelvis.

In fact, I feel that the development of a pyelographic medium that is well nigh perfect is of as great help to the urologist as the fact that the medium can be given by vein. When it is given by vein the picture obtained is a little less satisfactory and affords a great deal less assisting information.

The more timid urologist feared that, with the advent of urography after intravenous injection, he would return to the lowly state of a specialist in urethritis. Interpretation of the ureterograms, he feared, would be done by the roentgenologist, who might become a combined specialist, not in a limited field like that of the specialists in diseases of the eye, ear, nose, and throat, but instead in diseases of the lungs, kidneys, stomach, and bones. Such, of course, will not occur, for in cases in which the general practitioner or roentgenologist employs urography after intravenous injection, he invariably will find that information obtainable only through the cystoscope will be necessary before the satisfactory completion of the case.

PEDIATRICS AND CHILD PSYCHOLOGY

JOHN E. ANDERSON, Minneapolis (*Journal A. M. A.*, Oct. 4, 1930), points out that, despite the popular loose use of the word psychology, there is a considerable body of able scientific investigators who are gradually building up a substantial body of knowledge about human behavior. As the physical health of children is improved, questions of mental health, learning and adjustment arise and more and more demand is made on the scientist and physician for information and guidance. The contribution of psychology to pediatrics is both general and special. The first consists of a background of terminology, concept and understanding and the second of technic such as the intelligence test, and such specific results as may be expected from the coördinated attacks of physician, psychologist, sociologist and educator on the life of the young child, shown in the recently developed institutes for the study of children. The psychologist may expect from the pediatrician in the future a sympathetic understanding of the basic principles of child life and the modes of modifying child behavior. Through contact with children in school, on the playground, at home, at work and at play, *en masse* as well as individually, the forward looking pediatrician can supplement his contacts with children as patients in such a way as to become an intelligent and wise counselor on all aspects of child life.

ADMINISTRATION OF THIONIN AND METHYL VIOLET IN INTESTINAL BRUCELLA INFECTION

The dye was administered by HUGH R. LEAVELL, MARY A. POSTON and HAROLD L. AMOSS, Baltimore (*Journal A. M. A.*, Sept. 20, 1930), to three patients showing a persistence of *Brucella* in the stools, in the form of pills coated with phenyl salicylate, from 25 to 200 mg. being given in the course of twenty-four hours. At the same time, a retention enema of 300 c.c. of from 1:25,000 to 1:100,000 of the dye was given daily following a soapsuds enema. The dyes were given for approximately a week at a time, and during periods between courses of dye cultures were made of the stools daily. Slight constipation was the only symptom that could possibly be attributed to the use of dyes.

NEUROLOGIC SIGNS AND THEIR DISCOVERIES

GEORGE W. HALL, Chicago (*Journal A. M. A.*, Sept. 6, 1930), reviews some of the more common neurologic signs, such as the Argyll Robertson pupil, the Romberg sign, the loss of abdominal reflexes, the Babinski sign, the Brudzinski's sign, Kernig's sign, Korsakoff's syndrome, Laségue's sign in sciatica the Oppenheim sign, and Honer's syndrome for the purpose of adding some historical interest to these commoner and more important neurologic signs with the hope that the general practitioner may review them in a more retentive manner and so apply them in his examinations as to render them of value in the recognition of organic changes in the central nervous system.

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the *Journal-Lancet* is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1459.

Man, 24 years old, first seen on August 11, 1930, complaining of a skin rash on the face. He stated that the rash first appeared on April 15, 1930, as a small red spot on the nose. The rash then spread over the nose, cheeks, ears, shoulders, and finally down the arms to the elbows. The skin would first turn red and then become scaly. Some of the skin lesions itched slightly. The past history was negative except for an operation for sinusitis in 1924.

The patient stated that he had had a daily temperature ranging from 101° to 103°. He had developed progressive anorexia with a loss of weight of about 17 pounds since the onset of his illness. Admitted to the hospital on September 19, 1930. Complained only of the skin rash. At this time the rash involved the face, neck, shoulders, and the arms down to the elbows. The temperature on admission was 100.8°. Blood pressure 128/90. No other positive physical findings.

September 19, nose and throat cultures were negative. Wassermann negative. Kahn test negative. Urine: specific gravity 1018; acid; no sugar; no albumin; many hyaline casts and an occasional leucocyte. Numerous urine examinations showed about the same findings. Blood examination September 20: hemoglobin 70 per cent; red cells 3,030,000; white cells 4,800; polymorphonuclears 74 per cent; lymphocytes 22 per cent. Blood urea nitrogen 32.6 mg.; uric acid 7.2 mg. Phenol-sulphonphthalein September 22, 60 per cent. Von Pirquet and Mantoux tests negative. Concentration and dilution test, September 21, showed normal kidney function.

October 1, hemoglobin 43 per cent; red cells 1,520,000; white cells 3,500; 92 per cent polymorphonuclears; 8 per cent lymphocytes. Icterus index 60 units.

X-ray examination August 12 showed a negative chest. September 22, X-ray showed multiple areas of consolidation in the lungs.

Progress notes. September 20, no râles in any part of the chest. Temperature 102.6°. September 26, patient coughed up tenacious mucus; squeaky râles heard in the right base; on this day he became irrational. September 27, numerous râles in the right axilla and at the base of the right lung. September 30 the patient was definitely jaundiced and also somewhat cyanosed. Right rectus rigidity in the right upper quadrant. Liver not palpable. October 3, jaundice ++. Rigidity in the

right upper quadrant. Signs of consolidation throughout the right chest. Death October 3.

Post-mortem report. The skin lesions have been described. Marked jaundice. No edema except swelling in the region of the skin lesions. Peritoneal cavity 100 cc. of clear, straw-colored fluid; each pleural cavity 250 cc. of clear, straw-colored fluid. Soft fibrinous adhesions in both pleural cavities. The right lung weighs 1100 grams, the left 1125 grams; marked lobar consolidation involving the greater part of both lungs. The heart weighs 375 grams; no disease. The liver weighs 2050 grams; cloudy swelling. Kidneys together weigh 450 grams; cloudy swelling.

Diagnosis. 1. Acute disseminated lupus erythematosus. 2. Bilateral lobar pneumonia.

Comment. Acute lupus erythematosus usually results in death with some form of infection (endocarditis, septicemia, pneumonia, etc.). This lesion is not due to the tubercle bacillus but to a hemolytic streptococcus.

Autopsy—30—1465.

Girl, 12 years old, admitted to hospital October 2, in coma. She was fairly well until one week before admission when she had a sudden severe chill, followed by a fever of 103°. She vomited a great deal the next day and, following that, she became drowsy and slept most of the time until admission to the hospital. She complained of severe headache and pain in the back for the past week. She gave a history of heart trouble since two years of age and chorea during the past six years. She had had scarlet fever when six years old, measles, and chickenpox. She had had an amputation of her great toe when two and one-half years old. A sinus drainage was done later.

On physical examination she was found to be well developed and fairly well nourished. She was irritable and very uncooperative and objected to being handled. The head and neck were negative. She had petechiae over the soft palate and in the buccal mucosa. The throat was slightly injected. There was some definite rigidity of the neck and pain on motion. The lungs were clear. The heart was greatly enlarged. There was a thrill over the apex with a loud systolic murmur and a snappy presystolic murmur. There was indefinite tenderness over the abdomen. There was an operative scar over the left great toe, and the nail was absent. The reflexes were apparently normal. The patient did not

regain consciousness and died on October 6.

Her temperature was 104° ; her pulse varied between 150 and 160; respirations 40 during the stay in the hospital. Urinalysis revealed a specific gravity of 1017; a faint trace of albumin; negative sugar; numerous hyaline casts and a few granular casts, with 25 to 30 erythrocytes and 6 to 8 pus cells. The spinal fluid gave a cell count of 700 on October 2 and 5,800 on October 4, with polymorphonuclears 50 per cent and lymphocytes 50 per cent. There was sugar in three different specimens. Cultures of the spinal fluid were all negative.

Post-mortem report. No edema. Slight jaundice. Numerous small petechiae over the greater part of the body. The heart weighs 305 grams; 15 cm. in width; chest width 22 cm. at the same level. All the chambers are dilated; both ventricles are hypertrophied. The mitral valve shows an old stenosis and insufficiency with numerous large, soft vegetations on its edges. There are a few fresh vegetations of the same type on the aortic and tricuspid valves. Small areas of bronchopneumonia. The spleen weighs 450 grams; soft, reddish pulp. The liver weighs 160 grams; cloudy swelling. The kidneys together weigh 420 grams. The surfaces are cloudy and covered with petechial hemorrhages. Examination of the brain was not allowed.

Diagnosis. 1. Old rheumatic mitral endocarditis with subacute bacterial endocarditis involving the mitral, aortic and tricuspid valves. 2. Septicemia.

Comment. The patient was suffering from an old mitral valve defect, resulting from chorea or rheumatic fever. Her final illness was a bacterial endocarditis developing on the basis of the old rheumatic valve defect. About 50 per cent of bacterial endocarditis follow old rheumatic valve defects. Unfortunately the brain could not be examined at post-mortem. A case with a similar history in which we did examine the brain revealed multiple small abscesses in the cortex, which gave rise to the cellular exudate in the spinal fluid. Possibly a similar lesion was present in this case.

Autopsy—30—1669.

Boy, 16 years old, admitted November 1, 1930. Illness began suddenly October 25 with a convulsion followed by unconsciousness. One hour later had similar attack and another later in the day. Felt well after these attacks. Did not pass urine or feces during the period of unconsciousness. October 26 felt well enough to continue work. October 27 noticed tingling and weakness of right arm and leg. Weakness became more marked until on October 29 he was unable to move these extremities. Said that the whole arm and leg were involved at the same time; it did not start in one place and progress. Past health and general condition good. Measles in childhood; no other diseases. No serious accidents or operations. Father 57, living and well; mother living and well; two brothers and two sisters living and well. No diabetes, tuberculosis, or cancer in the family.

Physical examination. Blood pressure 132/80. Slight stiffness of neck; no tenderness in this region. Paralysis of right side of face; right eye-slit wide. The nasolabial fold was ironed out. Resistance to pressure of cheek muscle was diminished. Sensation was markedly decreased over the right side of the face and neck but not entirely lost. There was flaccid paralysis of the right side of the body. Reflexes were normal. Coordi-

nation test on left side of body, normal with patient lying in bed. Sensations on right side of body markedly diminished but not lost. Speech was slow, hesitant, and difficult, but rational. Mentality was normal. The discs were myopic (6 D), right 7. Later the deep reflexes on right side all +; normal on left. Abdominal and cremasteric minus 4 on right; normal on left. Left pupil responded to prolonged light.

Later the patient was sleeping at intervals. Urine: specific gravity 1028. Blood: hemoglobin 110 per cent; white cells 12,500; polymorphonuclears 79 per cent, lymphocytes 19 per cent, monocytes 2 per cent. November 2 the patient was able to move his right leg but had no control of his right arm. November 3 complained of frontal headache and numbness in the right hand. Right pupil larger than the left; fundi normal. Spinal puncture showed clear fluid; 10 cells; pressure 150 to 350; Wassermann, Nonne, and Noguchi negative. Patient refused food. November 4 he vomited a greenish fluid. November 6 severe headache; nausea; spastic paralysis on right side; very drowsy.

November 7 x-ray examination of the head and chest negative. November 8, beginning stupor; choked on water; did not talk distinctly. During the day breathing became harsh and there was a great deal of mucus in the throat; face flushed. November 10, labored breathing; mucus in the throat; face flushed; cyanosis; irregular, feeble pulse. Death 5:25 A. M. November 11.

The temperature ranged from 98.6° to 99.8° . Pulse was about 80. Respirations 18 to 20.

Post-mortem examination was practically negative except for the brain. The surface of the brain showed marked flattening and there was a small amount of greenish exudate over the left motor cortex. A large abscess was found involving the left frontoparietal region of the cerebrum. The nasal air sinuses were all normal. Both middle ears were normal.

Diagnosis. Abscess of the left frontoparietal region of the brain.

Comment. The symptoms indicated destruction of the left motor area but there was no definite indication as to whether the lesion was abscess or tumor. A sudden onset does not rule out a tumor. No primary source for the brain abscess was found.

TUMORS OF THE EYE AND ADNEXA

E. H. CARY, Dallas, Texas (*Journal A. M. A.*, Dec. 13, 1930), reports twenty-two cases of tumor including teleplasms from mesoblasts, teleplasms derived from neural epiblasts, teleplasms arising in parts, derived from masoblasts, teleplasms derived from cuticular epiblasts, optic nerve tumors, mesoblastic tumors; orbital sarcomas, a xanthosarcoma or liposarcoma, an orbital tumor of the gland type and an orbital cyst. He emphasized the value of injecting an eye specimen with solution of formaldehyde, as it aids materially in the clinician's macroscopic study of the eye without preventing further examination microscopically. The procedure of tying and incising all the branches of the external carotid on each side seems definitely to have delayed the death of several of the patients in whom it was used. The starvation method cannot be expected to be of great value when a branch of the ophthalmic artery is aiding in the nourishment of the field. The starvation operation is of no value in a carcinomatous condition, for metastasis takes place through the lymphatics.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of November 12, 1930

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, November 12, 1930. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the president, Dr. E. S. Geist.

There were 43 members and two visitors present.

Minutes of the October meeting were read and approved.

The scientific program of the evening consisted of two Theses and four case reports, as follows:

Dr. Alexander Stewart (St. Paul) read his Thesis entitled "Observations on Serotherapy in Scarlet Fever."

DISCUSSIONS

DR. W. R. RAMSEY (St. Paul): I think Dr. Stewart has covered the field very well. The effects of the serum antitoxin in the severe cases is very marked; as he said, it is sometimes spectacular. The disease is so treacherous that one is warranted in giving the serum, and now that the dosage is so small, that is, so concentrated, one is not likely to get serum sickness. The matter of prophylaxis is still very much in doubt. Parke, Singer, and others have come to the conclusion that this is still in the experimental stage and have given no definite conclusions, but they hope to have collected enough cases and data to have something definite in the next year or two. Some of these cases do get a terrific reaction.

DR. FRANKLIN B. WRIGHT (Minneapolis): My experience with scarlet fever is limited to one case in which I was particularly interested. Eight years ago this child, then five years old, developed scarlet fever. She had a temperature of 104° and two nurses constantly for five weeks. She developed an adenitis on both sides of her neck and a double otitis media and apparently was going to die. As a last resort it was decided to give her some foreign protein therapy. Not being able to find horse serum in the Twin Cities at the time, she was given diphtheria antitoxin. Her temperature had been 104°, and after this first dose it dropped to 102° in six hours. After the second dose her temperature dropped to normal and stayed normal, and in two weeks she was able to be taken south. Now whether or not it was due to diphtheria antitoxin, or the use of foreign protein, or whatnot, she got well.

DR. H. T. NIPPERT (St. Paul): I should like to ask Dr. Stewart how he gives the serum, whether intramuscularly, intravenously, or subcutaneously; in very toxic cases would he advise the intravenous use?

With reference to Dr. Wright's remarks, I might add that before scarlet fever antitoxin came into use we had sometimes used diphtheria antitoxin and got fairly good results. We also used antistreptococcal serum and thought we got fairly good results with that too.

DR. STEWART (in closing): Answering Dr. Nippert's

question as to the method of administration, we give the serum intramuscularly except in some of the late cases we give it intravenously. The first serum that came out we gave intravenously. I recall one case in which I tried giving it intramuscularly, before the serum was made up in the concentrated form. It took me about an hour and a half to give that much. We formerly had a lot of trouble and quite a lot of reaction.

In connection with Dr. Wright's remarks on the use of diphtheria antitoxin, we have used that a number of times and thought we got good results, but we get better results from the specific serum.

Dr. William H. Hengstler (St. Paul) read his Thesis on "Neurological Aspect of Head Injuries."

DISCUSSION

DR. A. S. HAMILTON (Minneapolis): I have listened to this discussion with great interest, and think Dr. Hengstler has covered the subject fully, clearly, and conservatively. It is certain that the number of head injuries one sees has increased in recent years; at least those that are classified in reports under the heading of fractures of the skull are so increased. No doubt the coming of the automobile and the speed at which it is driven is to blame for much of this increase, but the X-ray also is responsible for many of these reports. At least, it seems to me that what we now call severe fractures of the skull were in my early days called fractures; and those cases which we now see, where one physician sees a line and calls it a fracture and another physician, equally skillful and equally honest, sees the same case and doubts the presence of fracture, were all called concussion without question.

Of course, the X-ray has done a great deal to aid us in diagnosis, but it is not the fracture of the bone which determines the severity of the injury; it is the degree of involvement of the brain covering, of the blood vessels, of the cranial nerves, and of the brain tissue itself, which determines the severity of the head injury, and here the X-ray does not help us greatly. In determining the severity of the injury, one must give close attention to the degree and duration of the unconsciousness. If the patient is in a condition of coma or even of profound stupor and remains so for two or three hours or more, it seems to me that we must assume something more than an ordinary concussion. Of course, in a world where nearly everyone seems to be insured, it is often difficult to get the exact facts. As an illustration of this, I was yesterday looking over two records of the same man. One was given by the man himself in which he recorded a statement of absolute unconsciousness for three hours following his injury. The other report, made by the man who assisted him, stated that he went for help directly after the accident and returned in ten minutes. The patient was sitting up and was conscious. With assistance, he got into an automobile and was driven several miles to a hospital. He was an Irishman and in the course of his journey he laughed and joked, remarked that you could not kill an Irishman, smoked

a cigar and was finally delivered in a conscious condition at the door of the hospital. This does not prove that the man was lying, for, in head injuries, all incidents are sometimes blotted out of the memory for a certain time so that the patient cannot go back and reconstruct his life. Certainly, however, the case where the man responds in a clear headed way, even though he cannot afterward recall what happened, is very different from that one in which the individual is in a profound coma for a considerable period. Where there is loss of the deep reflexes and marked pupillary changes, including failure of the pupils to respond to stimuli, the case is certainly serious.

Unfortunately, it is very difficult at the present time to find any statistics which would be generally accepted as to what the results are likely to be in the average case of head injury. As I have already remarked, we are so generally insured against injury and the desire for a little compensation is so widespread, that a motivating psychologic factor is very likely to develop symptoms which at best are often largely of a subjective character and keep alive these distressing phenomena which, without the compensation situation, would certainly long ago have disappeared.

Dr. Hengstler has referred to epilepsy following head injuries. Unfortunately, here again, we have no reliable statistics on which we may depend to determine the likelihood of epilepsy in any given case. I have seen statistics where epilepsy is said to have developed in cases of head injury with fracture of the skull in as high as thirty per cent of cases. Judged by my own experience, such a statement is ridiculous unless the author is dealing with a specially selected series of very grave cases. Like the author, as I understand him, I look upon epilepsy as a situation where there must be some fundamental constitutional condition, and if trauma is to be looked upon as a cause of epilepsy, if the above opinion is correct, it must be looked upon only as a precipitating or exciting cause and not as the ultimate cause. I have, however, seen cases of convulsions of generalized character developing in cases following head injury, where I can hardly assume the relationship was merely coincidental and I have felt that some times injury to the brain may bring on generalized convulsions.

What is known as delayed hemorrhage constitutes an interesting feature in a very limited percentage of head injuries, but a sufficient number of cases have now been reported that one cannot doubt their existence. The period between the time of injury and the onset of the cerebral hemorrhage may be anywhere from a day or two up to as long as a few weeks, and it is worthy of note that in the cases of delayed hemorrhage reported there has frequently been found evidence of pathological conditions in the vessels so that the injury would have been looked upon ordinarily as only a precipitating cause.

DR. J. F. CORBETT (Minneapolis): I enjoyed this essay a great deal. As the paper was read, there went before my mind the positive indications for operation. First and foremost is the case where progressive symptoms develop, where there is a little bleeding from a vessel outside of the dura. The patient may develop paralysis, aphasia, unconsciousness, and finally reach the stage of medullary compression and die. These cases are common causes of death in head injuries. In the statistics of Le Cont in Cook County, a major part of the deaths from head injuries were attributed to extradural hemor-

rhage. The cure is operation. The operation is in simply removing the clot, if necessary the ligation of the vessel, and the outcome is pretty fairly good. I have had an opportunity to do this a little over 30 times and have had two deaths, and both of these were cases that reached the stage of medullary compression. Another indication for immediate operation is where there is a compound fracture. Thorough immediate débridement is imperative.

But there is another condition which demands immediate operation and that is a fracture extending into the sinus in the frontal bone. I recently had a case where an abscess developed in the frontal region that came from such a crack being neglected. Depressions are commonly corrected by elevation or removal of fragment.

The spinal puncture needle is a very valuable thing and I had certain rules at the General Hospital to follow in the use of spinal punctures, but every once in a while somebody would go wrong and use the spinal puncture where it should not have been used. There are cases where it should not be used. First, if your patient is in shock, do not use the spinal puncture. Second, if there is threatened embarrassment of the medullary centers, do not use spinal puncture. And, third, although it is difficult to lay down exact rules for diagnosis, where there is bleeding in a large vessel in the brain or skull you may get a fatal ending from using spinal puncture; but I do not know how you can anticipate that in advance.

DR. HERBERT H. JONES (Minneapolis): It seems to me this paper is very opportune at this time. We formerly had the injuries caused by horses and those were direct accidents. Then we passed into an era of railroad accidents in which the large element was that of shock. The saying among the old railroad surgeons was that the injuries were so severe that the tissues were shocked and the patient did not do well. These accidents have been largely overcome by the railroads. We are passing now into the age of automobile injuries. When an automobile hits a person that person is temporarily unable to control his head; that is, the head hits the ground or some object and we get the peculiar head injuries that we see in ever increasing numbers. Those accidents are especially in the neurologist's field to deal with, as there must be a competent diagnosis in order to decide whether the person is so shocked that the outcome will be fatal if operated upon. A certain number must be operated upon in order to prevent devastating hemorrhage into the brain tissue. And the decision is a very important one. This paper is a very timely one.

DR. J. C. MCKINLEY (Minneapolis): Martland published an article on "Punch Drunk" in the *Journal of the A. M. A.* in October, 1929, which seems to me to bring up a point which is not appreciated in our consideration of concussion and contusion of the brain. He calls attention to the high incidence of commonly progressive neurologic syndromes (ataxia, tremors, Parkinsonian states) in prize fighters, especially those of the rough and tumble type of poor boxer who takes much head punishment over a considerable period of time. He thinks that the symptoms are due to petechial hemorrhages in the brain. Now we usually think of the knock-out in a fight as a pure case of concussion without permanent injury, but obviously from Martland's observa-

tions a small amount of permanent damage is done to the brain with each knockout blow. The effects are cumulative until a fullblown neurologic picture develops. This indicates the difficulty, if not impossibility, of separating concussion, with its temporary effect of loss of consciousness, from contusion, with its permanent anatomical and often functional damage. One should be guarded in a given case in speaking of a concussion without contusion, as it is doubtful if such a circumstance actually occurs.

Dr. A. W. IDE (St. Paul): In our experience in railway work, head injuries have been becoming more and more infrequent. The few injuries that we do see are not caused by accidents incident to the operation of trains. Occasionally some one is injured as a result of a speeder accident. These speeders are small gasoline inspection cars. In spite of every precaution, the light cars sometimes leave the rails and throw the passenger from his seat.

It seems to me that one of the greatest problems in connection with head injuries is getting the men back on the job. Headache and dizziness persist and are very annoying. Patients are apt to be uncertain of themselves. They doubt their ability to continue work over prolonged periods.

A sympathetic attitude on the part of the physician is very necessary. These patients need encouragement.

Dr. HENGSTLER (in closing): I appreciate very much the discussion of this paper and wish to thank the gentlemen for it.

I want to say that I agree most heartily with what Dr. Corbett said about the use of spinal puncture, believing that spinal puncture should be used, but used discriminately; and I agree with him that in cases of free hemorrhage, intracranially, its outcome cannot be foreseen.

With respect to epilepsy, my experience with this following head injuries is somewhat limited. The cases that I have had have all been in connection with litigation and the patient was claiming epilepsy as a result of the head injury. Some claimed types of grand mal and some of petit mal, but in each instance investigation proved these individuals came from epileptic families where the history had been covered up. One can conceive of an individual who had epileptic parents and who has an epilepsy in abeyance, and then who experiences an accident which lights up this epilepsy that formerly had been in abeyance. That, I think, might be admitted, but in my cases, where they had true epilepsy following head injury, it has always been of the Jacksonian type. I think my experience has been too small, perhaps, to make a definite statement about the matter of epilepsy. In the cases brought into court, there is no question but what a thorough investigation should be made of the family and antecedents to prevent concealing a history of previous epilepsy.

Since writing this paper, and within the last two months, I have helped take care of a woman who was injured in St. Paul, and who was in a state of unconsciousness for fifty-two days, and finally died of pneumonia. She was brought into the hospital with a respiratory rate of four per minute, and a pulse in the fifties, and in profound shock. We decided on a spinal puncture and drained off 60 cc. of bloody fluid. She improved following the first puncture and we continued

these. After some days of bloody fluid, it began to clear, going through the characteristic changes, and the woman seemed on the road to recovery. She never got beyond a certain point, however. Her eyes were open and she would take food, but she knew nothing of what was going on around her. Those of us who were seeing the patient right along advised against opening the head, but her husband had friends who were very insistent upon it. We did not yield, however, and at autopsy our judgment was proven correct. The skull was opened and she had no clots of any kind, intracranially, but the right cortex was very badly lacerated, and had she lived, of course, she would never have regained normal mentality. In this case we were fortunate, at autopsy, in getting the evidence which proved that the proper therapy had been used.

Dr. H. P. Ritchie (St. Paul) gave the following three case reports:

1. A Case of Prenatal Sarcoma.
2. Multiple Congenital Clefts of the Face.
3. A Transplant of the Female Breast.

I have three cases which I believe are worthy of our permanent records.

Case 1 is that of a baby born on June 20, 1929, at Pine City, Minnesota, under the care of Dr. Stratte. There is nothing in the family history that would have any bearing on the case. The carrying period was normal; the confinement was normal. Subsequent to birth, Dr. Stratte remembered that the amniotic fluid as it was evacuated was distinctly bloody, but this was not noted at the time for obvious reasons. The baby was born white with a large outgrowing spongy bleeding tumor which involved the right heel and foot. A tourniquet was placed on the leg and as soon as the mother was cared for the baby was transported to the Children's Hospital in St. Paul, where it arrived about two hours after birth. Dr. Ray Shannon saw the case, appreciated the critical situation and transfused with the father's blood. Blood count, hemoglobin 48, reds 1,790,000, blood grouping IV. I was called in to pass upon the possibility of surgical procedures other than amputation. The indication for this operation appeared imperative. After another transfusion, the leg was amputated in the lower third at the fifth hour of the baby's life. The specimen was given to Dr. Kano Ikeda, who made many sections of this tumor. A photomicrograph of but one of several sections made shows a densely cellular tumor with nerve fibers, greatly enlarged, running throughout. Dr. Ikeda's report, copied from the history, is as follows:

"A soft fungoid mass about 6 cm. in diameter protrudes out of the tibial aspect of the right foot and along the inner surface of the ankle. The surface of the mass is rounded and devoid of skin. The plantar aspect of the mass is irregular and broken. The cut surface shows a soft whitish cellular tissue with areas of hemorrhage. The tumor tissue infiltrates diffusely through the soft tissue of the tarsal portion of the foot. The aspect of the os calcis appears broken through by the tumor growth, while a cordlike trunk 1 cm. in diameter is present along the course of the tendo Achillis. The tumor is composed of compactly arranged bundles of large pale staining spindle cells running in all direc-

tions. Many mitotic figures are noted. Diagnosis: Spindle-cell sarcoma."

Examination of the gross specimen showed that the amputation was through or so near to the tumor that, should the baby live, recurrence would surely follow. The tumor had extended, pushing aside the neighboring tissue alongside the tendon of Achilles up into the leg. The father was frankly told that the operation was unsatisfactory and incomplete. Reamputation assumed the aspect of a moral problem. Was it justifiable to further mutilate this infant in the presence of such an active malignant growth? I decided to be influenced by the solution of two questions. Had metastasis already taken place? X-ray studies of the lungs were made and were negative. The question of icterus was run down and its presence disproven. The second question was whether the new growth was primarily an osteogenetic tumor? Rightly or wrongly, I have carried in my head the idea that primary bone tumors of the sarcomatous type were eventually lethal. The few cases which have come under the care of Dr. MacLaren, Dr. Daugherty and myself are all dead, no matter what the point of amputation. The bones of the foot were found to be involved. This question was carefully considered by Dr. Bell and Dr. Ikeda with the conclusion that they were secondarily and not primarily involved. The father was most understanding and cooperative, and I received permission to reamputate. The point of amputation received consideration as to whether it should be undertaken in the leg or above the knee. I finally decided that the question was critical and so amputated on the fifth day of the baby's life in the lower third of the femur. The baby was bundled up and taken from the operating table back to its mother in Pine City. Under the care of Dr. Stratte this baby has now developed into a husky, beautiful child, fourteen months old.

The value of this case from a surgical standpoint is nothing. These cases must be very rare, but we have not made a complete survey of the literature in this respect. Possibly there are many cases which have not reached the literature. From an embryonal standpoint it is interesting to speculate upon the cause of such a luxuriant growth developing to such a point in utero. It may have some bearing upon the theories of the formation of new growths. I presume from a pathological aspect the proper procedure will be to send all these data to the Sarcoma Commission for further consideration. From a clinical standpoint, the circumstances and problems of this case were as dramatic as in any of my recent experience.

Case 2 is a baby now four months old which shows multiple congenital clefts of the face. In Fig. 1 a cleft appears in the right upper lip, commonly described as "harelip"; also a cleft at the right angle of the mouth extending into the right cheek, and a cleft of the left angle of the mouth extending into the left cheek. In Chapter IX, Volume V, of *Lewis' System of Surgery*, I have had the wonderful opportunity to review some of the problems in the field of congenital clefts of the face and jaw. As I read that chapter in cold print I am startled at the controversial tone of it, the indirect and uncertain language of several statements and the over-emphasis on certain parts of the technic. But there is one part which I believe may very well be greatly enlarged. Part II of the chapter is entitled "A Surgical Interpretation of the Embryology." This is the product

of a study undertaken through the interested help of Professor R. H. Scammon, with a definite purpose to relate the embryology of the upper face and jaw to the surgical problems of this locality. I am in no position to talk embryology. I am still uncertain as to how much of the data recognized as principles of growth is incontrovertibly established; how much of the evidence is due to the direct study in the human embryo; how much is indirect evidence taken from the lower animals and applied to the human embryo. There is, however, a general agreement that the face is formed by the contact, union, or coalescence of separately developing groups of embryonal tissue. In embryological terms, these are called "processes." The mandibular processes form the lower jaw, the maxillary processes and the frontal-nasal processes form the upper jaw. In the effort to carry embryology to our clinical problems, it seems to me that we should have a broader term of description of the embryonal groups, so as to include all elements, no matter whether it is skin, muscle or mucous membrane, or bone, or whatever kind of tissue, because there is here found all of the superficial tissues of the body which at some time require surgical attack. In searching for a substitute term, the word "division" was selected as being broad enough to include all elements under consideration for surgical repair. In Fig. 2 are marked lines and letters inserted upon a photograph of a bilateral cleft lip. This particular case was selected because the clefts are exactly symmetrical; thus the prolabium of the median embryonal division is beautifully outlined. It is necessary to follow this figure while reading the description.

The lower jaw is formed by the union of the mandibular processes, here described as the right and left inferior lateral embryonal divisions. Should there occur a failure of union of these two divisions, a cleft will result. This cleft must be a median cleft and is here represented by a straight line in the lower lip. The upper jaw has a right and left lateral embryonal division exactly similar to the lower jaw. A failure of union between the right or left superior lateral embryonal division and the right or left inferior lateral embryonal division will result in a cleft at the angle of the mouth,

There is one division of this subject, however, where these considerations have been entirely disregarded, viz., the transplant of glands. From a surgical standpoint the claims made for these procedures have exceeded the possibility of tissue transference. Glands have a complicated anatomical structure. They have intricate physiological function, depend for their activity upon direct arterial blood supply, and have a definite system of absorption. We are told that these are all severed, and, on the principle of a free graft, these tissues are then placed in another location with the expectation that this complicated anatomical arrangement will be maintained and the physiological action restored. Indeed, it is suggested that the glands be placed in muscles, that the outer surfaces be scarified in the hope of obtaining new channels of nourishment; but when looked at from the principle of free graft and the flap, it seems to me that a gland so transferred can only have temporary effect, must either degenerate or become encysted as a foreign body, and that the clinical results reported following such procedures must be, in the main, psychological.

The mammary gland is the least complicated of any,

but if it had been completely severed from its attachment and placed in the neck or elsewhere, it would not have given the picture here shown. In this case the mammary gland was at no time severed from its original blood supply. Possibly some part of it may have been cut away but at all times it has been living tissue and during the years new channels have had time to form and consequently when puberty took place we see physiological enlargement. The explanation of its growth in this case appears logical and reasonable, and I believe that this gland would have been activated in its odd position by pregnancy.

There is a chance for some one to make complete revision of the whole field based upon the physiology of the cell or groups of cells included in the transplant.

Dr. Arthur W. Ide (St. Paul) reported the following case of prenatal sarcoma, and the baby patient was presented before the Academy.

The patient (Baby B.), a girl, is now 35 days old. She was born in the Northern Pacific Hospital, St. Paul, Dr. H. G. Collie attending.

At birth a tumor was seen involving the left leg. This growth measured sixteen and one-half cm. in length and twenty three and one-half cm. in circumference. It was situated on the anterior surface of the knee and extended upward onto the anterior surface of the thigh and downward on the anterior surface of the leg. There was a small ulcer on the anterior surface of the tumor.

General examination showed the baby to be normal except for this tumor. She weighed seven pounds twelve ounces at birth.

Family History: The parents are both living and are strong and healthy. They have one other child, a boy, three and one-half years old, who is perfectly normal, well and strong. There is no history of syphilis, rheumatism, gout, tuberculosis, epilepsy or malignant disease. The paternal grandmother died of Hodgkin's disease.

The patient has been at home and cared for by the mother except for the first ten days of her life. She now weighs seven pounds eight ounces, four ounces less than her weight at birth.

The tumor has not enlarged since birth. The ulcer on the anterior surface of the tumor has extended. It is now two and one-half cm. in diameter.

The patient was seen by Dr. E. T. Bell, who considered the tumor to be a sarcoma.

It is very probable that the growth is malignant. The X-ray indicates that the bone is not the primary seat of the growth. It is firm in consistency. A biopsy so far has not seemed justifiable and for this reason we cannot state definitely the nature of the growth.

The meeting adjourned.

R. T. LAVAKE, M. D.,
Secretary.

RESULTS OF VARIOUS OPERATIONS FOR PROLAPSE OF UTERUS

VIRGIL S. COUNSELLER and LEDA J. STACY, Rochester, Minn. (*Journal A. M. A.*, Oct. 4, 1930) report a series that consisted of 980 patients surgically treated for prolapse of the uterus. Of this number, replies from questionnaires were received from 819 (83.56 per cent). There were sixteen deaths, a mortality of 1.62 per cent in the 980 cases. Satisfactory results occurred in 95.97 per cent of the entire series. Five types of operation were employed. The modified Gilliam technic of internal shortening of the round ligaments comprised one group, and various other types of internal shortening of the round ligaments combined with vaginal plastic operations comprised the second group of operations used for patients of the child-bearing period. For patients who had passed the menopause, the Mayo vaginal type of hysterectomy, the Watkins-Wertheim interposition and the Kocher abdominal fixation operations were employed. From the results it is shown that the modified Gilliam operation, combined with vaginal plastic procedures, is the operation of choice among all types of internal shortening of the round ligaments when other pelvic operation is not indicated. Satisfactory results were obtained in 88.57 per cent in which the Gilliam technic was used. The Kocher operation is reserved for that group of patients who are past the menopause, senile, and constitute poor surgical risks and for those who previously have undergone hysterectomy, with prolapse of the cervical stump. Satisfactory results were obtained in 94.87 per cent of the cases in which it

was used. If the uterus is of normal size and there is a mild degree of prolapse, graded 1 or 2, with large cystocele and the patient has passed the menopause, the Watkins-Wertheim interposition operation is successfully employed. Satisfactory results were obtained in 96.61 per cent of the cases in which the operation was used. When the prolapse is of marked degree and is associated with large cystoceles, and the women are past the menopause, the Mayo vaginal type of hysterectomy is the operation of choice. It was employed in 81 per cent of the patients who had passed the menopause, with satisfactory results in 97.22 per cent.

SENSORY DISTURBANCES FOLLOWING OPERATIONS ON THE KIDNEY

A case of neuralgia of the twelfth intercostal nerve following traumatization as a result of surgical exploration of the kidney is reported by C. B. HIGGINS and PAUL C. BUCY, Chicago (*Journal A. M. A.*, Aug. 20, 1930). The pain radiated from the right flank to the right groin, simulating ureteral pain. There was a marked myeralgesia in the same area. The nerve was resected, resulting in a complete cure. Microscopic examination revealed evidence of previous severe trauma to the nerve. The case is presented as an example of a possible complication of operations on the kidney and for consideration in the differential diagnosis of ureteral pain in patients who have had a previous operation in this region.

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GREETINGS

The JOURNAL-LANCET, its editor, editorial board, and publisher, extends to the physicians of the Northwest its hearty good wishes, hoping that they enjoyed a happy Christmas Day, and with a full expectation that they will have a prosperous New Year.

The editor is always very thankful when his editorials have been read, and they are open to

the same criticism as any other writings are, to which he does not object. Doubtless, he says many things that are not entirely satisfactory to all medical men, but it has not been in a spirit of vindictiveness, but in order to stimulate criticism and to bring down upon his head the wrath of the medical man or his commendation. Of course we all like to be commended for what we try to do, but those of us who are old enough know that destructive criticism is often interspersed with comment. To that the editor makes no objection. We feel that our large number of readers have been loyal and faithful in their adherence to THE JOURNAL-LANCET. The interests of THE JOURNAL-LANCET are the interests of the medical profession as a whole, and the editor has not hesitated to comment upon the difficulties which we all meet with, and he regrets, as do all men, that there is sometimes a lack of harmony among medical men. Recently there has been too much factional politics, which is destructive and we have no doubt all hope for the time when all medical societies will be harmoniously interested, that they will lay aside their personal prejudices and all they may discuss and re-discuss in medical politics, and it is to be hoped they will all come down to a common basis, that basis which is good for the medical societies or the medical profession, and in that way only can we hope to accomplish the desirable.

In the larger societies, of course, many things come up that are disturbing, disturbing to the whole profession, and these things are the very issues that we ought to eliminate from our personal conduct. There should be less acrimony and less activity among divided forces. The individual idea should be disregarded very largely and only that which is good for medicine as a whole should be striven for by all members of every society with the one end in view, to accomplish the best things for the medical profession. Intrigues and underhanded methods should be discouraged and factions or factional opinions should be eliminated as far as possible from unnecessary medical politics.

We must for the time being fight for our rights. Men who have prepared themselves assiduously for the practice of medicine certainly should be given preference to the interloper who is trying to get something over for his own particular creed, but this can only be done if we act as a united body after having cleansed ourselves of individual preferences.

THE DOCTOR'S PHILOSOPHY OF DEATH

In dealing with this topic it perhaps would be well to quote from an authority. (Nathan) on the philosophy of life: "It is simply merely this, to forget the miseries of the past, remember only its charm; to live the present to the limit of its utmost possibilities, and to view the future as one who has traveled romantically in a colorful far country views the skyline of his nearing homeland, with a sense of great content and slightly sad resignation."

The doctor's philosophy, of course, must extend, not only from the beginning of life, but to death itself. And he probably agrees with Mark Twain, who, when he heard the death of a friend who had more or less trouble in the world, said that his friend must be at peace. Doctors become more or less indifferent to life and death, naturally, as they see so much of them, and yet their indifference is simply a cloak which is worn for the protection and sometimes the comfort of others, an assurance, perhaps, which enables them to carry the patient through and to show their sympathy to the family by their kindly deeds and their efforts to save life, not necessarily to prolong life in those who are chronically invalided. Doubtless there are many times when the doctor feels that death would be a very welcome thing to many of his patients and to members of a patient's family; but he is not permitted, nor does he choose, to express his opinion of euthanasia.

The writer believes the average physician looks upon his own life from much the same angle as he does upon the lives of others; that is, if he has been of material aid to the sick, has created a certain amount of happiness in the world, and has conscientiously endeavored to practice his profession in a manly way, he feels that when his time comes he may not find death unwelcome. We all know of doctors who are afflicted with chronic diseases, sometimes with diseases which are soon fatal, and they expect, in the course of time, in the near or far future, to lay down their lives according to circumstances.

The average man will express himself as being ready and prepared, and regards death as did one of the Frohmans who was on the Titanic, and who, when he saw the inevitable sinking of the ship, spoke to some frightened and nervous man and said, "Why worry about this, death is a great adventure." So it is. We all know men who are afflicted with diseases which sooner or later will

cause death, and we, as a profession, are not very much surprised when we hear of a colleague who has been called away. We remember him for a certain length of time. Some men are remembered for a month, some for years; the latter, however, are few in comparison with the former. That was old Samuel Johnson's idea when, in one of his paragraphs he suggests to a friend to see that his bills are paid, that his club dues are settled, to make all his necessary arrangements and also to consider that he will be remembered for about a month. However, Samuel Johnson still lives in the hearts of all reading people. The man who meets death face to face calmly, without emotional disturbance, who seeks to leave a comforting impression behind him, is the man who stays in our memory longest.

Notwithstanding our seeming indifference to the approach of death, we must be of a speculative mind, speculative as to how long our diseases will last, of the effect they will have upon us personally and individually, what the result of a certain turn in affairs might be. And we realize, too, that when death approaches it is usually in a kindly, simple, and comfortable manner. Our consciousness is more or less dulled, we are not worried by anxiety and fears as to the future except for those whom we leave behind, and it is probable that we even omit the latter part of it and as others do, think mostly of ourselves. So death, then, is not such a horrible thing as one might imagine, and those who have witnessed death in its various forms will tell you that sometimes it is accompanied by great thankfulness, a great relief for the man who has died, that he is safe from trouble and the worries and perplexities of the world and takes the ship "Outward Bound" philosophically.

DR. DUNSMOOR, NOTED SURGEON, DIES ON COAST

Dr. Frederick A. Dunsmoor, one of Minneapolis' outstanding surgeons for almost a half century, founder of the old Minnesota Hospital College and one of the organizers of the medical college at the University of Minnesota, died December 16 at his home in Hollywood, California, where he has resided for the past five years.

Dr. Dunsmoor, who was 77 years old, was born in Minneapolis and studied at the University of Minnesota. In 1877 he accepted a position as professor of Surgery in the St. Paul Medical College, where he taught for two years. Dr. Dunsmoor then accepted the chair of surgery in the

medical department of Hamline University where he taught two years, resigning to devote himself to the organization of the Minnesota Hospital College.

He bought the old Winslow hotel on Main Street N. E. and started the college in coöperation with several other physicians and citizens, and it was there that he founded the first Eye, Ear and Nose Clinic in the Twin Cities. He served as Vice President and dean of the college besides being professor of surgery, surgeon to the dispensary and attending surgeon to the hospital.

While he was in this position, the institution and the St. Paul Medical College were merged to form the medical college at the University of Minnesota, where he was appointed to the chair of clinical and operative surgery, which he held until 1913.

He had an active part in the development of Asbury hospital and served as a surgeon at different times at St. Mary's, St. Barnabas, Swedish and City hospitals. He was also surgeon at different times for more than a half dozen railroads.

His articles on his specialties appeared in leading medical journals and he was recognized for his skill as a surgeon throughout the medical world.

He was a member of the Hennepin County Medical Society, the Minnesota Medical Association, the Academy of Surgeons and various other medical and surgical organizations.

Surviving him are two daughters, Mrs. Homer P. Clark, St. Paul, and Mrs. Frederick W. McCarty, Denver; a brother, Dr. John Dunsmoor, Los Angeles, and three nieces in Minneapolis, Mrs. A. W. Armatage, Mrs. Horace Lowry and Mrs. N. H. Scheldrup.

DR. A. E. ANDERSON DIES

Dr. Andrew E. Anderson, one of the founders of the Swedish Hospital in Minneapolis, died December 11 at his home.

Born in Sweden April 2, 1859, Dr. Anderson had been in the United States for 57 years and a resident of Minneapolis for 33 years. One of four doctors who started the Swedish Hospital, he had been on the staff ever since. He was a member of the Hennepin County and American Medical Associations. He was a graduate of the Colorado University School of Medicine and started practice in Ironwood, Mich.

Surviving Dr. Anderson are his wife, a daughter, Bessie, Iron Mountain, Mich., and two brothers.

NEWS ITEMS

Dr. L. G. Hill, formerly located at Sioux Falls, S. D., is now in practice at Estherville, Iowa.

Dr. F. H. Rollins, St. Charles, Minn., is the new president of the Minnesota State Sanitary conference.

Dr. R. G. Stevens has been elected president of the McKennan hospital staff at Sioux Falls for the year 1931.

Dr. A. B. Hunt, Northfield, Minn., was recently married to Miss Evelyn W. Stevens, of Vermillion, S. D.

Dr. R. S. Madland, formerly located at Pequot, Minn., has moved to Fairfax, Minn., and will continue his practice.

Dr. R. I. Younger, Chicago, has become a partner of Dr. D. B. Pritchard, Winona, in the general practice of medicine.

Dr. A. W. Ratz, formerly located at Mankato, Minn., has moved to Fargo, where he has opened offices for general practice.

Congress has approved a bill of \$600,000 authorizing an addition to the Battle Mountain Sanitarium at Hot Springs, S. D.

Dr. W. K. Jacoby, who has been in active practice at Mobridge, S. D., for the past twelve years, has moved to Wautonga, Oklahoma.

Dr. J. W. Stuhr, Stillwater, is the new president of the Washington County Medical Society. Dr. E. S. Boleyn was made secretary.

Dr. W. L. Diven, Bismarck, was elected president of the Sixth District Medical Society, at a meeting attended by over 40 physicians. Other officers named were Dr. L. G. Eastman, Hazen, vice president, and Dr. L. W. Larson, Bismarck, secretary-treasurer. Dr. Diven succeeds Dr. C. W. Schoregge, Bismarck.

Dr. L. R. Herman, formerly of Manilla, Iowa, is now in charge of the U. S. Veterans Hospital at Fargo, as general physician and surgeon.

South Dakota is to have a \$475,000 sanitarium built by the U. S. Government at Pierre for the Indian patients from both Dakota's and Montana.

Dr. H. J. Day, Sioux Falls, has been appointed physician at the South Dakota State Prison. He succeeds Dr. D. W. Craig, who recently resigned.

Dr. M. P. Morse, LeRoy, Minn., well known to all of the medical men of the State, was elected mayor of his city at the election held this month.

Miss Dorette Truedson, R. N., who was with the Swedish Hospital in Minneapolis, has been appointed superintendent of the Warren, Minn., Hospital.

Dr. G. Kertesz, Minneapolis; has recently returned from several months absence in Europe, where he spent much time in postgraduate work at Vienna.

Dr. A. E. Anderson, Minneapolis, one of the pioneer physicians of the city and the founder of the Swedish Hospital, died this month at the age of 72 years.

The new Lutheran Hospital at Bemidji, Minn., was formerly opened this month to the public. The building is of fireproof construction of two floors and basement.

James, a five-year-old son of Dr. and Mrs. A. M. Anderson, Luverne, Minn., was instantly killed by being run over by a large auto truck while he was coasting near his home.

Dr. G. A. Love, Preston, Minn., one of the oldest physicians in southeastern Minnesota, died at his home this month. Dr. Love was 80 years old and the father of five physicians and dentists.

The \$60,000 nurses' home with quarters for 45 members of the staff was dedicated this month at Ahgwahching, Minn. It is a two-story building of brick and stone and fireproof in every particular.

The new Aberdeen Clinic was formerly opened on Friday, December 19th, under the management of Drs. C. O. Hollinger and George Milan. Many improvements and new equipments have been installed.

Charles E. Schaffer, father of Governor Schaffer of North Dakota, died recently at the age of 80 years. He was the first white man to settle in that section of the state, what is now known as McKenzie County.

The Watertown, S. D., District Medical Society have named the following officers for 1931: Dr. E. N. Nelson, Watertown, president; Dr. J. H. Lockwood, Henry, vice president, and Dr. Wm. Duncan, Watertown, secretary.

The Sioux Falls District Medical Society have elected officers for the coming year as follows: Dr. O. L. Hanson, Valley Springs, president; Dr. G. E. Zimmerman, Sioux Falls, vice president, and Dr. C. W. Forsberg, Sioux Falls, secretary.

Dr. Fred A. Duns Moor, Minneapolis, founder

of the old Minnesota Hospital College and one of the organizers of the Medical College at the University of Minnesota, died December 16th at his home at Hollywood, Calif. He was 77 years old.

Dr. Charles R. Ball, St. Paul, nationally known neurologist and psychiatrist, died at his winter home in San Diego, Calif., this month. He has been in active practice for over thirty years in St. Paul and had always been very active in all medical societies.

The Red River Valley, Minnesota, Medical Society held their annual meeting at Crookston, and elected the following officers: Dr. C. H. Stuurmanns, Erskine, president; Dr. A. Shedlov, Fosston, vice president, and Dr. C. L. Oppegaard, Crookston, secretary-treasurer.

Dr. S. Z. Kerlan, Aitkin, Minn., was stricken with a serious attack of appendicitis last month and was taken to the Brainerd Hospital, where he underwent an operation. He is now reported to be gaining his former good health and will soon be able to resume his regular calls.

About thirty members of the Scott and Carver County Minn. Medical Societies held a meeting this month at Jordan. Interesting topics to the profession were discussed, and a committee was named to look after certain bills that are to be presented at the meeting of the state legislature next month at St. Paul.

Dr. F. I. Darrow of Fargo was elected president of the Cass County Medical society at the annual meeting. Dr. Olaf Sand presented a paper on a professional subject and Dr. Arne Oftedal, retiring president, gave an address. Other officers are Dr. E. M. Watson, vice president, and Dr. B. K. Kilbourne, secretary-treasurer.

Dr. M. P. Morse of Le Roy was elected president of the Mower County, Minn., Medical Association at their annual meeting and the following officers: Vice president, Dr. P. A. Lommen, Austin; secretary, Dr. C. L. Sheedy, Austin; treasurer, Dr. E. A. Henslin, Le Roy, and delegate to the state medical convention, Dr. O. H. Hegge, Austin. Plans were made for the organization of a women's auxiliary to the association. The membership of this auxiliary would consist of the wives of physicians in Mower County.

The annual meeting of the Le Sueur-Nicollet County Medical Association was held and following officers were elected: President, Dr. J. O. McKeon, Montgomery; vice president, Dr. W. McKechnie, St. Peter; secretary, Dr. J. W. Dan-

iels, St. Peter; treasurer, Dr. F. P. Strathern, St. Peter.

A meeting of the doctors of Rapid City, S. D., was recently held in that city for the purpose of discussing present day problems and topics of interest to the profession. It is planned to hold these meetings each month.

The Minnesota State Board of Medical Examiners revoked the license of Philip Mueller, physician and surgeon with offices at Minneapolis. The Board found Mueller guilty of immoral, dishonorable and unprofessional conduct, the particular offense being the habitual indulgence in the use of morphine sulphate.

Dr. M. O. Henry, Minneapolis, delivered a paper on December 11, before the Pierce-St. Croix Counties Medical Society at River Falls, Wis. The subject of his paper was "Early Diagnosis of Tuberculosis in Joints." Dr. Henry also read a paper before the Jackson County Medical Society of Kansas City, Mo., on the "Boehler Treatment of Fractures" on November 18.

Dr. J. D. Carr, superintendent of the North Dakota hospital for the insane, was elected president of the Stutsman County Medical Society at its annual meeting. Other officers are Dr. T. L. DePuy, Jamestown, vice president; Dr. W. E. Longstreth, Kensal, vice president, and Dr. W. W. Wood, Jamestown, secretary. Dr. L. M. Randall of the Mayo Clinic, Rochester, Minn., was the chief speaker at the banquet.

Dr. David M. Berkman, Rochester, was elected president of the Olmsted County Medical Society at the annual meeting held in the Mayo Clinic. Other officers named are Dr. A. B. Evarts, Rochester, vice president, and Dr. Monte C. Piper, Rochester, secretary and treasurer. Dr. E. Starr Judd of the Mayo Clinic staff and president of the American Medical Association, who is senior member delegate to the State Medical Association meeting, was re-elected as delegate.

At the medical association meeting held at Le Sueur Center Monday evening the following officers were elected for the coming year: Dr. J. C. McKeon of Montgomery, president; Dr. W. McKechnie, Dr. F. P. Strathern, of St. Peter, treasurer. Dr. Swan Ericson, Le Sueur was named delegate to the state meeting with Dr. M. Peterson of St. Peter as alternate. Censors appointed were: Dr. H. B. Aitkens of Center, and Dr. O. H. Wolmer of St. Peter.

The last meeting of 1930 for the Sixth District Medical Society was held at Bismarck, N. D. There were thirty-three members and three visitors present. Dinner was served at 6:30 P. M., after which Doctor L. M. Randall of the Department of Obstetrics and Gynecology, Mayo Clinic, Rochester, Minnesota, presented a very excellent paper, "Diagnosis and Treatment of Conditions Causing Hemorrhage During Pregnancy."

Officers were elected for the ensuing year: President, Dr. W. L. Diven, Bismarck; Vice President, Dr. L. G. Eastman, Hazen; Secretary and Treasurer, Dr. L. W. Larson, Bismarck.

The regular meeting of the Cass County Medical Society was held at Fargo, Friday evening, December 19th. Dr. Olaf Sand delivered a most excellent paper on "Some Points in Diagnosis and Prophylaxis of Post Operative Thrombosis and Embolism." Dr. Axel Oftedal, retiring president, delivered his presidential address. New officers for the year were elected: Dr. Frank I. Darrow, president; Dr. E. M. Watson, vice president, and Dr. B. K. Kilbourne re-elected secretary-treasurer.

Ada Winchel, fifty-one years of age, was sentenced to a term of not to exceed one year in the Women's Reformatory at Shakopee, Minnesota, by the Hon. R. D. O'Brien, Judge of the District Court, St. Paul, Minn. The defendant was charged with a violation of the Basic Science Law. Mrs. Winchel has been maintaining an office in St. Paul without a license to practice healing. She held herself out to the public as an Arabian Rheumatic Specialist. She was arrested following the diagnosis of a case as rheumatism and offering to cure the same in four months time. The defendant told the Court that she had been getting her Arabian liniment from Mohamet Nackley, alias "Doctor" Muckly, who was sentenced to one year in the State Prison at Stillwater, for receiving the earnings of a prostitute. The Court suspended the sentence and placed Mrs. Winchel in the custody of the Probation Officer, on the condition that she close her office and refrain from practicing in any way, shape or manner in the State of Minnesota.

REPORTS OF SOCIETIES

PROCEEDINGS of the MINNEAPOLIS CLINICAL CLUB

Meeting of October 9, 1930.

The regular meeting of the Minneapolis Clinical Club was held in the Hennepin County Medical Society Rooms, on Thursday, October 9, 1930. Dinner was served at 6:00 o'clock and at 7:00 o'clock the business meeting was called to order by the President, Dr. Barron. Minutes of the preceding meeting were read by the secretary and approved as read. After the regular business of the evening, the scientific program was given. It is as follows:

Dr. Lajoie read a paper on "Cardiac Emergencies."

Dr. Fansler followed with a report of "two unusual rectal cases," one of "Tuberculous Intestinal Fistula," and one of "Ischiorectal Abscess with Pneumonia." These cases were discussed by Drs. McCartney, Wynne, and Barron.

Dr. Donald McCarthy presented two cases: (1) "Malignant Hypertension," (2) "Diabetes with Substernal Thyroid."

The meeting adjourned at 8:30 P. M.

Meeting of November 13, 1930.

The regular monthly meeting of the Minneapolis Clinical Club was held on Thursday evening, November 13, 1930, in the Lounge of the Hennepin County Medical Society. Dinner was served at 6:00 o'clock and the meeting was called to order shortly after 7:00 o'clock by the President, Dr. Moses Barron.

There were 28 members and 2 visitors present.

Minutes of the October meeting were read and approved.

After a short business meeting, the scientific program was taken up, as follows:

Dr. A. A. Zierold reported a case of "Sympathectomy as a Cure for Angina Pectoris," and after the reading of the history the patient was presented to the Society. The case report is as follows:

This patient is a man 60 years of age who has been suffering for three years from anginal attacks of increasing severity and frequency. He has been under the care and observation of an internist and the clinical diagnosis of angina pectoris has been confirmed by repeated electrocardiograms. During the past few months the pain has been sufficient to require large doses of morphin regularly. As the patient exhibited no evidence of cardiac decompensation it was thought

that, could he be relieved of pain, he might be restored to some degree of activity and usefulness.

It was decided to attempt the alcohol injection of the cervical and thoracic sympathetic ganglia as advocated by Mixter and White. Because of the deep layer of fat and muscle overlying the upper thoracic spine, the original technic could not be followed. Under novocain infiltration anesthesia a five-inch incision was made caudally from the level of the seventh cervical spine, parallel to and two inches distant from the upper dorsal spinous processes. The incision was carried through the muscles to the ribs, exposing them at the articulations with the transverse processes. Beginning with the first rib, a needle was introduced under the lower border at this point and directed medially and upward to reach the site of the sympathetic ganglion without entering the pleura. It was then aspirated to confirm its location, and a few cc. of 1 per cent novocain were injected. Five needles were placed after this manner under the borders of the upper five ribs. In each of these 5 cc. of 80 per cent alcohol were injected. The patient experienced no pain or discomfort, but noted an anesthesia of the inner side of the left arm and the left chest wall corresponding to the distribution of the upper five thoracic nerves. On the following day this was replaced by a similar area of hyperesthesia, which gradually disappeared in the following two weeks.

The patient's convalescence was uneventful. The wound healed promptly and in a normal manner. It is now four weeks since his operation and he has not experienced a single anginal pain.

You will note that as evidence of the interruption of the splanchnic pathways, the patient has the enophthalmos and constricted pupil of a Horner's syndrome. The left hand is also warmer than the right as a result of vasoconstrictor loss.

It is yet too early to warrant any positive statement, but it appears reasonable to believe that the patient will be free from pain for some time, if not permanently.

DISCUSSION

DR. H. L. ULRICH: I am sorry I did not know this patient was coming this evening or I would have looked over my notes before the meeting. I saw this man in consultation three years ago. He had a distinct coronary closure from which he recovered and went about his work again. This year I saw him again and at that time he was in a state of persistent anginal attacks.

I suggested that he be operated on and that the thoracic ganglia be injected. This is as far as I know about the patient. At the time I saw him first he had distinct coronary disease and now gives evidence of coronary disease in the electrocardiogram. He is entirely free from pain.

DR. ARCHIE H. BEARD: I understand that the results of this injection have a tendency to disappear, and that in time the attacks of angina are apt to return. I have the impression that White's last report stated that at the end of about three years some were having anginal attacks.

Do you think that this was due to faulty technic at the time of the injection, and do you know whether the same results occur when you cut down on the ganglia and inject them direct?

DR. ZIEROLD: It is probable that the percentage of unsatisfactory cases is in direct proportion to those which do not develop a Horner's syndrome as secondary evidence of successful injection.

DR. J. C. MICHAEL: Do you attempt to expose the ganglia?

DR. ZIEROLD: No.

DR. MICHAEL: One would not, of course, expect a return of function in these sympathetics?

DR. ZIEROLD: I assume that the ganglia will be destroyed or irreparably injured by the alcohol.

DR. J. S. MCCARTNEY read a paper on "Cirrhosis of the Liver," illustrating it with numerous lantern slides. (Paper to be published later, probably in the *Archives of Internal Medicine*.)

DISCUSSION

DR. H. L. ULRICH: I merely wish to emphasize that clinically I have been struck by the fact that in adults about 40 years of age, or over, when you find a pleural effusion that you cannot explain, it is well to look at the liver to see whether or not that patient has cirrhosis. The pleura may be the first cavity to show fluid.

The liver is a strange field, a strange organ. In the last few years we are getting reports that by injecting a pigment into one group of portal veins it comes up in one lobe of the liver, and by injecting another group it shows up on the other side of the liver. This differentiation of the blood in the portal vein is very strange. That is just one of the little mysterious points about the liver. And these plates we have seen tonight are not made any clearer by such knowledge but merely show why they may be so confusing.

Great credit is due to Dr. McCartney for his persistent attempt to bring clearness to this subject. We should be very grateful to him for bringing so much order out of an apparent chaos.

DR. BARRON: This is the type of paper that can bear a great deal of discussion both from the clinical and the pathological standpoints.

Dr. Frederick H. Schaaf gave a talk on "Hunting Big Game with a Movie Camera," and showed two reels of pictures taken on his recent hunting trip in Canada. This was a very enjoyable addition to the program.

The meeting adjourned.

Meeting of the Sioux Valley Eye and Ear Academy
The following program of the Sioux Valley Eye and Ear Academy, January 20, 1931, will be presented at Sioux City, Iowa:

1. "The Paranasal Sinuses as a Focus of Infection."

Dr. C. M. Anderson, Mayo Clinic, Rochester, Minnesota.

2. "Retrolbulbar Neuritis, Its Etiology and Treatment." Dr. W. I. Lillie, Mayo Clinic, Rochester, Minnesota.

3. Conference: Case Reports:

"Duplication of Maxillary Sinus by Vertical Septum." Dr. E. B. Brooks, Lincoln, Neb.

"Squint." Dr. James C. Tucker, Beatrice, Neb.

Case Report. Dr. C. K. Shotstall, Associate Dr. Tucker, Beatrice, Neb.

Case Report. Dr. J. B. Potts, Omaha, Neb.

"Series of Lateral Sinus Cases." Dr. S. B. Chase, Fort Dodge, Iowa.

"Cataract Extraction in Diabetic Patient." Dr. C. M. Swab, Omaha, Neb.

"Bronchoscopic Case." Dr. S. D. Maiden, Council Bluffs, Iowa.

Case Reports. Dr. F. W. Dean and Dr. A. M. Dean, Council Bluffs, Iowa.

"Right Homonymous Hemianopsia." Dr. L. N. Grosvenor, Huron, So. Dak.

Case Report. Dr. J. B. Gregg, Sioux Falls, So. Dak.

FREDERICK H. ROOST, M. D.,
Secretary of the Sioux Valley Academy.

Yankton, S. D., District Medical Society Meeting

The annual meeting of the Yankton District Medical Society was held on December 11, 1930, Yankton. Dinner was served at 6:30 P. M. with an attendance of twenty-eight.

The following officers were elected for the ensuing year:

President—Dr. F. A. Moore.

Vice-President—Dr. J. C. Ohlmacher.

Secretary-Treasurer—Dr. J. A. Hohf.

Delegates to State Convention: Regular—Dr. G. R. Albertson, Dr. G. A. Landmann. Alternates—Dr. F. C. Smith, Dr. G. S. Adams.

Following the business meeting the scientific program was presented as follows:

Birth Injuries—Sciatica. With lantern slides. By Doctor Anatole Kolodny of Sioux City, Iowa.

The pictures were fine and Doctor Kolodny's talk was interesting and very highly instructive. The Doctor is a very thorough student.

The next, moving pictures of Hydrocele and Colle's Fracture by L. B. Holmes of Omaha, a representative of The Petrolagar Laboratories.

The next was a Few Sidelights upon European Clinics by Doctor E. M. Stansbury of Vermillion. His talk was both interesting and entertaining.

Our guest of honor was Doctor P. D. Peabody, President of the State Association, who made a short talk upon the State Association and needed medical legislation and the forthcoming state meeting to be held in June in conjunction with the North Dakota State Medical Association. This is to be a Golden Jubilee Meeting of the North Dakota and South Dakota State Associations.

The medical students from the University at Vermillion were in attendance at the scientific program.

DR. J. A. HOHF, Secretary.

CLASSIFIED ADVERTISEMENTS

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Resident Physician. Salary and maintenance. Good opportunity for Surgical experience. For particulars address A. G. Stasel, Superintendent Eitel Hospital, Minneapolis, Minn.

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Position open June 1, 1931. Assistantship with firm doing country and hospital practice. Must have experience, particularly in history writing. \$225.00 per month. Satisfactory work will result in advancement. No bad habits tolerated. Address 788, care of this office.

Technician at Liberty

Capable young woman wishes position as Technician, nurse's helper or Doctor's assistant. Three and one-half years' experience in X-ray, Laboratory and Physiotherapy. Two years Clinical training. Very best references. Address 789, care of this office.

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Young lady wishes position as Doctor's assistant or office girl. Three years' experience in practical nursing. Three and one-half years' experience in Doctor's office. Good references. Address 790, care of this office.

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Unopposed practice in S. E. Minnesota, in good town of 500 population. Cash income between \$5,000 and \$6,000. A money maker from the start. Small investment. Address 787, care of this office.

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Hanovia Luxor Quartz light. Used only a few hours. Original price \$315.00, for cash \$150.00. Address 778, care of this office.

Wanted

Recent graduate to assist in general practice with group of physicians, in Minnesota. Salary basis to start. If satisfactory will consider affiliation. Address 786, care of this office.

Wanted

A first class Eye, Ear, Nose and Throat specialist to become associated with a group of physicians in Minneapolis. Overhead expenses on percentage basis. State age and place of special training. Address 782, care of this office.

Locum Tenens Available

Recent graduate of University of Minnesota, one year of private practice. Ability, personality, appearance and character will satisfy the most critical. Will also consider permanent location. Address 777, care of this office.

For Sale

Stock, including Hanovia Sun Lamps, Diathermy, Surgical Instruments, Microscopes and other equipment for sale at a sacrifice. Sophia Hein, Executrix, estate of Frederick Hein. Address 219, S. Lexington Ave., St. Paul.

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SELECTION OF THE PATIENT WITH PULMONARY TUBERCULOSIS FOR COLLAPSE THERAPY*

By THOMAS J. KINSELLA, M.D., F.A.C.S.
Surgeon, Glen Lake Sanatorium; Instructor in Surgery,
Medical School, University of Minnesota
OAK TERRACE, MINNESOTA

Any disease which accounts for approximately ten per cent of our yearly deaths should be of interest to all members of the medical profession, and should be given more consideration than is ordinarily accorded it both from the diagnostic and therapeutic standpoint. If medical men will learn to think tuberculosis and in terms of tuberculosis, if they will suspect tuberculosis when confronted with chronic disease of obscure etiology, and if they will remember that tuberculosis may involve almost any tissue or organ of the body, particularly the lungs, pleura, larynx, intestines, peritoneum, pelvic organs, genito-urinary system, bones, joints, meninges, and skin, they will help themselves and at the same time give the patient the benefit of earlier diagnosis of his tuberculous lesion with the better prognosis which such early discovery affords. The patient thus profits in the increased chance of recovery, the community profits by the recognition, isolation, and the proper supervision of the patient with infectious disease, thus protecting others, particularly the younger generation, and the doctor profits, not always financially nor in the credit due

him for recognizing the condition, but at least in the personal satisfaction of having untangled another diagnostic knot.

When once a diagnosis of active tuberculosis is established, treatment becomes imperative at once. Early diagnosis should give the patient a better prognosis, but unfortunately it frequently does not. Halfway measures or a warning to be careful are given and the disease is allowed to progress to a more advanced stage before intensive treatment is instituted. Early diagnosis is of no value unless the treatment is instituted without delay.

We recognize two general types of pulmonary tuberculosis; first an acute or exudative type, rather rapid in onset with the lesion of a soft type characterized by fluffy parenchymal deposits with very little evidence of fibrosis; and the second type, more or less chronic in nature, in which the disease process takes on a more or less proliferative form with plenty of evidence of fibrous tissue formation. The x-ray films clearly show these types of disease process.

The healing of a tuberculous process within the lung, as elsewhere, may be considered as occur-

*Read at a meeting of the North Dakota State Medical Association at Bismarck, North Dakota, May 26, 27, 28, 1930.

ring in two ways: by absorption of the inflammatory exudate accompanied or followed by an ingrowth of fibrous tissue which attempts to encapsulate the remaining disease. Our efforts at treating tuberculosis of any organ should be directed toward obtaining physiological rest for that particular organ. In treating pulmonary tuberculosis, we should include intensive rest for the organism as a whole to reduce respiratory activity, suppression of excessive cough to prevent additional trauma to the lung, proper medication together with postural drainage to aid in the removal of secretions from the chest with the least effort, and additional limitation of respiratory motion by the use of proper position in bed or the use of weights, etc., to restrict costal motion. Under such a régime intensively carried through, with minimal tuberculosis, we may expect 90 to 95% recovery, with moderately advanced tuberculosis, approximately 60%, while in far advanced disease the percentage of recovery falls to approximately 10%. These figures again emphasize the importance of early discovery of tuberculosis with early institution of treatment. Some patients will recover in spite of everything that they or others may do to interfere with their recovery. They are fortunate. No one can tell at the onset whether this type of procedure will in a given individual give good results or not, but usually it fails. The majority of patients should not have their chances jeopardized by trying an experiment with halfway measures.

Collapse therapy has come to play a rôle of increasing importance in treating pulmonary tuberculosis, particularly in patients of the moderately advanced and far advanced group. Alexander in his "Surgery of Pulmonary Tuberculosis" states: "Without doubt it (pulmonary compression) is the most valuable contribution to the therapy of pulmonary tuberculosis that has been made in the the present century and in fact since Detweiler advocated sanatorium treatment in the eighteen seventies." While these forms of therapy are spectacular and extremely valuable, we must not forget that taken altogether they are not available to over 25% of patients as we see them, that for this reason other measures must be utilized to their fullest extent in treating this disease. However, many patients who die of pulmonary tuberculosis have at some time during the course of their disease passed through a stage when the judicious use of collapse therapy measures might have turned the tide in their favor. In our Glen Lake experience, we have utilized pneumothorax in 13.3% of patients, phrenic operations in 4.9% and thoracoplasty in 3.75%.

Before collapse therapy can be used intelligently, we must understand the changes which occur with collapse and how they influence the healing of the tuberculosis. When the lung is collapsed by any method the following changes occur: First, the lung is immobilized to greater or less extent and its respiratory activity decreased. Second, there is reduction in lung volume which favors the removal of secretion, closure of cavity and control of bleeding vessels. Third, there is a lymph stasis with consequent reduction in toxic absorption from the disease area. Fourth, there is either an increase or a decrease in blood supply to the lung depending upon whether the lung is relaxed or compressed. In the usual run of cases treated, there is probably diminution of blood supply to this lung. A terminal end-arteritis may be demonstrated in many lungs which have been collapsed for a considerable period of time. Fifth, as a result of the collapse, there is an increase in fibrous tissue throughout the collapsed lung which aids in the encapsulation and healing of the tuberculosis process.

INDICATIONS FOR COLLAPSE THERAPY

The general indications for collapse therapy are three: First, extensive unilateral disease; second, cavitation; third, profuse or repeated pulmonary hemorrhage. These apply in general to all three forms of collapse therapy. However, each method varies somewhat in itself and the indications and contra-indications for each differ from those for the other methods of treatment. Now two questions arise, how to select the patient who needs collapse therapy, and next how to choose in each individual the proper type of collapse therapy for that individual.

CHOOSING THE PATIENT FOR COLLAPSE THERAPY

When a patient with pulmonary tuberculosis is presented for treatment, we must decide what method will give this particular individual the greatest chance of controlling his disease with the least possible risk. From our standpoint we feel that all patients with active pulmonary tuberculosis should first of all be placed upon intensive bed rest and kept there for a considerable period of time, which will vary with each individual. No matter what method of treatment is used, the healing or arrest of the process must be brought about through the defensive powers of the body, and these are best served and built up by intensive rest. If the patient takes care of his trouble or is taking care of the trouble under a rest régime, and there are no complications, nothing else is necessary except to continue the program until the battle is won and then to gradually train the

patient back to working capacity. Fundamentally I believe it is wrong in the uncomplicated case of pulmonary tuberculosis to institute collapse therapy without a preliminary trial of bed rest, though of course, there may be exceptions to this rule.

If under the bed rest régime the patient does not improve after a fair trial, if the disease progresses, or if complications supervene, then a review should be made to see if conditions are suitable for collapse therapy. Tuberculosis disease suitable for treatment by collapse therapy should be unilateral, or at least predominantly unilateral. There must also be some indication that the patient still has resistance against tuberculosis. The patient who has really lost his fighting power against tuberculosis will not be saved by collapse therapy, and such attempts will serve only to discredit the method of treatment. When a patient's symptoms persist in spite of bed rest, when the fever, rapid pulse, toxemia, positive sputum, etc., continue, or when the complications of tuberculosis, i. e., cavitation and hemorrhage occur, collapse therapy must be seriously considered. We recognize that pulmonary hemorrhage in the course of pulmonary tuberculosis is an accidental thing, the result of erosion of a pulmonary vessel by the disease process, and that ordinarily these hemorrhages are self-limited; however, profuse hemorrhage or repeated small hemorrhage is an indication for collapse therapy, not only because it weakens the patient because of total blood loss, but also because the blood itself within the lung may carry tubercle bacilli into new areas and thus extend the disease. Pulmonary cavitation frequently is an indication for collapse therapy. While we know that pulmonary cavities may heal, particularly those of recent origin, we recognize that cavities which exceed two centimeters in diameter rarely heal without some outside interference.

To summarize, then, the patient whose tuberculosis is predominantly unilateral, who still has some resistance against tuberculosis but whose disease has not cleared under bed rest, or whose symptoms persist in spite of bed rest, or who is handicapped by any of the complications of pulmonary tuberculosis, should be considered for collapse therapy.

CHOOSING THE TYPE OF COLLAPSE THERAPY TO FIT THE INDIVIDUAL CASE

In choosing the type of collapse therapy for each individual, I believe the following rules should be followed, i. e., that the simplest method which will give results should be utilized. There

are three methods of collapse therapy in common use: first, artificial pneumothorax; second, operations upon the phrenic nerve, and third, extrapleural thoracoplasty. Each one of these must be considered separately as to indications, because each acts in a different way and affects the organism somewhat differently. In our opinion there is no quarrel between the various methods of collapse, the question being usually not which method shall it be, but rather which one is indicated.

ARTIFICIAL PNEUMOTHORAX

Artificial pneumothorax, a method of treatment in which the collapse of the lung is produced by the introduction of filtered atmospheric air into the pleural space is the simplest and most useful of all of the procedures. The treatment in itself is simple, the reaction is slight, yet if successful, it may give the most complete collapse of any of the methods available. If the lung is not adherent to the chest wall, it may be collapsed to less than ten per cent of its original volume, giving the most extensive collapse and the most marked immobilization possible. It is available to from ten to fifteen per cent of patients as we see them. The operative risk is slight, not exceeding a small fraction of one per cent.

In contrast to the other methods, pneumothorax is a flexible procedure in which collapse may be established gradually, and may be varied almost at the will of the operator. It may be increased or decreased as indications arise, and may at any time be discontinued and the lung allowed to expand and refunction as it did previously. It is our first method of choice for collapse, and we feel should always be tried before the other methods are undertaken, because the amount of collapse is so directly under control of the operator. For this reason it is possible to induce pneumothorax on one side in spite of fairly extensive active disease in the opposite lung, with the assurance that it may be established so gradually that the danger of increasing the process in the opposite side is held at a minimum, and that should a flare-up of the contra-lateral tuberculosis occur, the collapse may be reduced or discontinued, or even if necessary made bilateral. It is predominantly a bedside procedure and may be done at the patient's home, in the patient's bed, as well as in the operating room. It may be undertaken no matter how ill the patient, even during acute pulmonary hemorrhage.

The one thing which prevents the patient from taking pneumothorax or interferes with the result obtained, is the presence of intrapleural adhesions, the result of former pleurisy. It is im-

possible to accurately foretell whether or not the pleural cavity is patent. If there is a past history of pleurisy with effusion, empyema, or a previous pneumothorax discontinued some time previously, there is almost certain to be a fusion between the parietal and visceral pleuræ of greater or less extent, and pneumothorax in this case will either be impossible or far from complete. If upon x-ray films there is marked retraction of the mediastinum to the diseased side, one suspects pleural adhesions of greater or less extent although atelectasis may give the same picture. Chronic fibrotic and cavernous lesions, particularly peripheral cavities are frequently accompanied by adhesions between the visceral and parietal pleuræ. There is only one way in which one can be certain that a given patient cannot take pneumothorax and that is by repeated trial and failure. Even if a few pleural adhesions are present, the pneumothorax may give a satisfactory result, depending upon where these adhesions are and whether or not they interfere with the collapse of the diseased area, or the closure of the cavity or bleeding vessel.

Because of the flexibility of pneumothorax and its ease of administration and the relative lack of reaction to the patient, it may be used in the following cases which are relatively or absolutely unsatisfactory for the other types of procedure, particularly the more radical type, thoracoplasty.

1. Patients in the home.
2. Patients with acute or pneumonic tuberculosis confined more or less to one side.
3. Patients with recent disease or recent extension of disease of the exudative type.
4. Patients during active profuse or repeated pulmonary hemorrhage.
5. Patients with a small or even a moderate amount of active disease in the good side.
6. Patients with smaller amounts of disease in whom there is a question as to whether the more radical forms of treatment would be indicated.
7. Bilateral disease where bilateral collapse may be considered.

Patients who are given pneumothorax, should be made to understand at the beginning that while pneumothorax is a relatively simple procedure, it must be given repeatedly and for a considerable period of time, with refills every few days at first and later at increasing intervals, until many patients reach three or four week intervals and some more, even up to six months between refills; that pneumothorax once instituted for disease of any extent, should be continued for at least two to

three years and in many cases for a longer period of time depending upon how much disease was present originally, whether or not cavitation was present and what the patient's reaction to tuberculosis had been, whether or not complications had developed; and lastly that pneumothorax is subject to some complications, the commonest of which is the occurrence of a clear pleural effusion usually the result of tuberculous pleurisy, which occurs in at least 50 per cent of those taking pneumothorax and that on the average seven to ten per cent of the patients taking pneumothorax eventually develop tuberculous empyema.

The results which may be expected from pneumothorax depend of course upon the original tuberculous condition. It is frequently a life saving measure, as in the case of profuse pulmonary hemorrhage or acute tuberculous disease. It is very frequently a means of ridding the patient of persistent symptoms which cannot be cleared up in any other manner. Eventual results will depend, of course, upon the condition for which the pneumothorax was originally instituted, but from large series of cases it may be said that pneumothorax will double or even treble the given patient's chance to recover, over and above that which they have to expect without such treatment.

PHRENIC OPERATION

Operative work upon the phrenic nerve is designed to interrupt the nerve supply to the diaphragm on one side either temporarily or permanently, depending upon the design of the operator. Temporary interruptions of function of the hemidiaphragm are produced by injection, traumatization or section of the corresponding phrenic nerve, and are utilized where the more radical procedure is not necessary, or where the operation is to be done to give temporary paralysis only. The more radical interruption of the phrenic nerve, ordinarily accomplished by tearing out the nerve trunk, gives permanent paralysis of the corresponding hemidiaphragm. It is a procedure which can be done very nicely under local anesthesia, with little or no reaction even in patients who are quite ill, and may be carried out in the patient's bed or even, if necessary, in the patient's home. It is utilized in three ways—as an independent procedure, as a preliminary operation to other procedures, and as a combined procedure to supplement either pneumothorax or thoracoplasty.

When the hemidiaphragm is paralyzed it rises to its expiratory position, all active motion ceases, but paradoxical motion is present due to the changing intraabdominal pressure. The diaphragm ordinarily rises about an inch and one-

half to two inches, though if it is bound down by adhesions it may not rise at all. Occasionally we have seen an extremely marked rise of the diaphragm reaching as high as the third rib on the right side and the second rib on the left. The average collapse of the lung produced by diaphragmatic paralysis is approximately 30 per cent. This then, on the average, is much less than the collapse produced by pneumothorax and even less than that obtained by extrapleural thoracoplasty. We feel that ordinarily a phrenic operation is the operation of second choice, i. e., that if the patient can take pneumothorax, it should be done but if this is impossible or unsatisfactory, a phrenic operation should be considered.

We use phrenic operations then.

1. As a substitute for pneumothorax in case the first cannot be accomplished or is unsatisfactory, in cases of predominantly unilateral tuberculosis of either acute or chronic type.
2. To control profuse or repeated pulmonary hemorrhage.
3. To supplement pneumothorax and decrease the frequency of refills.
4. To supplement pneumothorax, particularly where the base of the lung is not collapsed, or where there are adhesions between the lower lobe and the diaphragm which are preventing the collapse of the disease area or cavity above.
5. To continue partial immobilization when discontinuing a pneumothorax.
6. As a preliminary to thoracoplasty. Test operation.
7. To prepare for thoracoplasty by immobilizing the lung affected by exudative disease until fibrosis occurs.
8. As a supplement to thoracoplasty, to increase collapse and immobilization.

The results of phrenic operations in some 155 patients at Glen Lake are miraculous in some, and disappointing in others, but about 75 per cent obtain some relief or improvement in symptoms. Many patients must later have more radical surgery when their condition permits.

THORACOPLASTY

Thoracoplasty is a much more radical method, which collapses one side of the chest by the subperiosteal paravertebral resection of segments of a series of ribs. The collapse comes suddenly, is associated with considerable trauma to the patient, and when once done, is permanent. For these reasons it is imperative that the patient chosen for thoracoplasty have one lung which is

absolutely free of active clinical disease. Upon the proper selection of patients depends much of the success of the operation. Patients with exudative disease are not suitable subjects and only the unilateral subjects with good resistance and chronic disease should be chosen. We prefer not to operate if there has been any evidence of clinical or x-ray activity in the good lung for at least one year, because any reactivation in the good lung not only reduces the chance of obtaining a successful result but may seriously endanger the patient's life.

Cases then suitable for thoracoplasty must be those with chronic disease confined to one lung, with evidence of resistance against tuberculosis, particularly those whose recovery is prevented by mechanical factors. All should be tried for pneumothorax first. This group will include cases with:

1. Extensive unilateral disease.
2. Cavitation.
3. Severe or repeated pulmonary hemorrhage.
4. Tuberculous empyema.
5. To replace pneumothorax which is lost or discontinued or not giving complete results.

The results from thoracoplasty are excellent when one considers that the patients are frequently not the best of surgical risks, being afflicted with extensive disease which has affected them for years, and which they have been unable to conquer either by their own efforts or through all other methods of treatment. They are usually open infectious cases, who have little to look forward to without some outside aid. From this group, with an operative mortality below 10 per cent, an average of 60+ per cent cures and marked improvements have been reported, with many returned to work. From the Glen Lake series which now numbers 125 patients since 1922, there are a total of 26 patients now dead from all causes at all times even several years after surgery. The total mortality within two weeks after operation is 7.2 per cent and that within three months is 9.6 per cent. The good results are very numerous, so common in fact that many patients hope and plan for the time when their condition will permit them to have surgical help.

CONTRAINDICATIONS

No discussion of collapse therapy is complete without considering the conditions which may make attempts at collapse therapy inadvisable. Many of these are relative contraindications only, which should with the simpler forms of collapse engender caution only, but which may absolutely

forbid attempts at thoracoplasty. They may be listed somewhat in their order of importance as follows:

1. Terminal tuberculous disease: If the patient has really lost his resistance against the disease, no form of collapse will save him and attempts will only discredit the method.

2. Apparently fatal extrapulmonary disease, tuberculous or otherwise, as cancer, etc.

3. Cardiac disease: All forms of collapse therapy throw an additional load upon the right side of the heart. The type of lesion present is important. This contraindication is relative, being much more important for thoracoplasty than for the simpler methods.

4. Extrapulmonary tuberculous lesion. Depending upon their location and severity, they may be a relative contraindication but usually are of more importance from the standpoint of prognosis.

5. Age. Extremes of age are, to be avoided ordinarily, particularly for thoracoplasty, although our series ranges from eleven to sixty-four.

6. Other factors of general condition, temperament, etc., must be given due consideration.

SUMMARY

Collapse therapy constitutes a valuable addition to our methods of treatment available for the handling of pulmonary tuberculosis. To the 25 per cent of patients who are suitable for such treatment, it offers a chance of recovery far in excess of that which they have to expect with any other method of handling. All patients under treatment for pulmonary tuberculosis should be carefully reviewed from time to time to see if they may not present favorable indications for collapse. If such indications are found, collapse therapy should be induced before extension of the disease makes the patient unsuitable for such attempts.

THE DIFFERENTIAL DIAGNOSIS OF DISEASE OF THE HEART*

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For many years the term chronic myocarditis was the beloved byword of the clinician. The only requisite for its use seemed to be a reasonable certainty that the patient under his scrutiny was afflicted with disease of the heart. If reasonable certainty did not exist, even though the patient presented symptoms referable to the heart, little if any argument was forthcoming regarding the validity of the diagnosis of chronic myocarditis. With the passing of years, however, those clinicians actually demanding proof of their diagnoses whenever possible, and working in association with trained, alert pathologists, have demonstrated to the medical world that chronic myocarditis is no longer a cloak under which they may hide their indifference.

The term chronic myocarditis, accurately used, denotes chronic inflammation of the muscle of the heart, the result of the invasion of microorganisms and the influence of their toxins. Those cases commonly identified as chronic myocarditis are in reality not infections or inflammations but disease of the cardiac muscle resulting from coronary sclerosis, hypertension, hyperthyroidism, and so forth.

The significance of diagnostic accuracy is of course obvious, the proper treatment and management of the patient primarily demanding it, and the reasonable accuracy of prognosis being impossible without it.

GENERAL FACTORS IN DIAGNOSIS

The first step in the diagnosis of disease of the heart, as in the diagnosis of other diseases, is obtaining an accurate history of the case. An accurate history consists not only of the chronologic record of the patient's present symptoms, but the careful record of previous symptoms and previous illnesses, with intelligent appraisal of their quantitative values and their proper relation to the present complaints.

The history of etiologic disease is often of unusual importance in the ultimate establishment of the correct diagnosis of the type of cardiac lesion. The admission of a clear-cut previous infectious episode conforming to the classical requirements for the diagnosis of rheumatic fever or chorea, is fairly conclusive evidence that the existing cardiopathy is rheumatic in origin. The converse of these facts, however, is unsound, and leads to frequent error in diagnosis. That is, the absence of a history of rheumatic fever or chorea

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does not by any means exclude the existence of rheumatic disease of the heart. It was not until recent years that clinicians fully realized that rheumatic fever occurs without involvement of the joints; such a form of the disease had been included among infections that were either unidentified or improperly classified.

The occurrence of disease of the heart in several children in one family is suggestive evidence of rheumatic disease of the heart, since rheumatic fever has been definitely shown to be a communicable disease. In the diagnosis of subacute bacterial endocarditis, the previous history of rheumatic fever and healed rheumatic lesions of the heart are helpful points, owing to the unusually high incidence of the disease in question as a super-imposed infection.

The history of intrathoracic infection such as pneumonia, empyema, recurrent pleuritis, and influenza and other forms of mediastinitis, may furnish incriminating evidence in the identification of adherent pericarditis.

Not infrequently the atypical objective signs of congenital disease of the heart become clarified after the knowledge that the patient was a "blue baby" and that resuscitation at the time of birth was difficult.

The antecedent history of a severe and prolonged attack of cardiac pain with the characteristic associated phenomena of cardiac infarction, may often be positive evidence of the existence of coronary arterial disease.

Many other instances could be recited to emphasize the importance of taking careful histories in the subsequent diagnosis of cardiac disease and the correct identification of the type of disease.

The next step in the differential diagnosis of cardiac disease is the careful, thorough, general examination of the patient and the thoughtful interpretation of objective signs. Clinicians years ago were unusually keen observers, necessity and lack of diagnostic accessories requiring them to utilize their endowed faculties to the utmost. They relied to a considerable degree on their observation of the patient's color, facial appearance and expression, the character and type of the respiratory movements, the visibility of superficial arterial and venous pulsations, deformities of the thorax, asymmetry, and so forth. In this connection I wish particularly to stress the importance of careful observation of the patient's facies, as not infrequently one will find portrayed there signs that clearly identify a specific cardiac lesion. The typical appearance of the facies of the patient with heart disease is characterized by an anxious expression, brightness of the eyes,

usually fullness of the cheeks, and as a rule varying degrees of cyanosis of the lips.

In moderately advanced or in advanced cases of mitral stenosis the facies is frequently so characteristic as to permit the venture of a so-called snapshot diagnosis. There is a rosy or cyanotic flush of the cheeks, particularly over the malar prominences and frequently involving the nasal prominence, giving the general appearance of a butterfly. This has led to the term, "mitral butterfly." The facial capillaries are frequently dilated and the lips, cyanotic. In contrast to the mitral facies, is that of aortic disease. Here more than in the former, is an anxious expression and a peculiar yellowish pallor of the skin, more apparent in the central portion of the face, giving a somewhat sunken appearance to the cheeks. Again, a varying degree of cyanosis of the lips exists.

Facies similar to that of aortic disease is seen in coronary disease, usually with infarction of a ventricle or with the cardiac failure consequent to infarction. A striking ashen pallor may occur; the expression is anxious, and the eyes are bright, which frequently gives them the appearance of being large.

A peculiar, dirty brownish pallor in the facies of emaciated, ill patients, the so-called *café au lait* color, suggests the presence of subacute bacterial endocarditis, particularly during the rare bacteria free stage. Marked diffuse cyanosis of the face, with the appearance of fullness of the features, is prone to occur in certain cases of congenital cardiac disease. The expression of the face is likely to be dull and listless, quite in contrast to the anxious expression so marked in certain forms of acquired disease of the heart.

Other points noted in the inspection of a patient frequently give invaluable clues as to the presence of disease of the heart and often of the type of lesion. Scrutiny of the hands and feet frequently yields productive data. Clubbing of the fingers and toes preëminently occurs in the presence of rather marked chronic congestion, particularly if there is interference in pulmonary circulation. Such clubbing is not wholly confined to cardiac disease, but occurs in chronic pulmonary tuberculosis, pulmonary fibrosis, emphysema, and bronchiectasis. However, it occurs so frequently in cardiac disease that the existence of congenital heart disease is considered, or failure of the right side of the heart such as occurs in pulmonary arteriosclerosis and other lesions, or subacute bacterial endocarditis.

The close observation of visible pulsations, not only the site and character of the apex beat but

other pulsations of the thorax, abdomen, neck and extremities, often gives evidence that lends definite weight in the ultimate evaluation of the type of lesion. If the subject has a thin thorax, the normal apex beat is often visible as a localized protrusion synchronous with and lasting throughout ventricular systole observed in the fifth intercostal space within the imaginary midclavicular line. In hypertrophy of the left ventricle the apex beat becomes forcible, visible even in a subject with a thick thorax, is heaving in character throughout systole and is displaced outward and downward. Hypertrophy and dilatation being coincidental and inseparable phenomena, the displacement downward and outward occurs, owing to the fact that the left ventricle first dilates at its weakest point, which is in the region of the apex. In hypertrophy and dilatation of the right ventricle one seeks the visible impulse traveling upward and to the left, occurring perhaps in the fourth or even in the third left intercostal space. The right ventricle, likewise, first dilates at its weakest point which is at the origin of the pulmonary artery, the conus arteriosus, and the primary enlargement is not to the right, as is frequently supposed, but to the left and upward. An extremely diffuse, wavy, nonforcible impulse usually denotes the fact that dilatation has exceeded hypertrophy.

Careful inspection usually enables the observer to distinguish between the abnormal apex impulse and the systolic interspace recessions of adherent pericarditis. The latter are true recessions, usually quite diffuse in distribution and associated with recessions in the left axilla and infrascapular region, the so-called sign of Broadbent. Some caution is necessary so as not to confuse the visible intercostal movements that frequently occur in normal subjects who have a thin thorax, with those of a greatly hypertrophied heart.

Careful observation of the jugular and carotid pulsations often permits identification of rhythm. The regularity of the pulsations excludes the existence of cardiac arrhythmia. Extremely rapid jugular excursions, occurring with far greater frequency than those of the apex beat, are suggestive evidence of the presence of auricular flutter. In a similar manner, the normal frequency of jugular pulsations occurring when the apex beat is extremely slow, is virtually absolute proof of the existence of complete heart block. Totally irregular carotid pulsations invariably permit the identification of auricular fibrillation. Other similar examples could be mentioned emphasizing

the importance of so simple a procedure as inspection.

The detection and interpretation of adventitious impulses and thrills over various portions of the thorax by palpation, frequently give information helpful in the differentiation of lesion type. The presence of a tracheal tug and a diastolic heave of the upper part of the thorax is suggestive evidence of thoracic aneurysm. A systolic shock and presystolic thrill at the apex leave little doubt regarding the presence of mitral stenosis, and the presence of a thrill, systolic in time, situated over or near the aortic area, directs attention to aortic stenosis. Palpable thrills, usually systolic in time, situated elsewhere than in the areas mentioned, may occur in disorders of the pericarditis. It is needless to emphasize pericarditis, calcification of the pericardium, and in the marked membrane thickening such as sometimes occurs in recurrent chronic fibrinous pericardium, notably in adherent pericarditis, as its significance in the determination of the size and contour of the heart is obvious. One point, which frequently affords evidence of a condition presenting some diagnostic difficulties, may bear repetition. The detection of areas of dullness along the borders of the thoracic portion of the spine frequently points to the existence of thoracic aneurysm; this is especially helpful when the descending aorta is concerned.

The identification of disease of the heart, and the differentiation of the type of disease, are extremely simple problems when the disease in question is classical in its manifestations. The problem becomes more difficult and more interesting when the course and symptoms depart from the accepted average. It is important to remember that an uncomplicated lesion of the heart is extremely rare. By uncomplicated lesion I mean a single lesion such as pure mitral stenosis without involvement of other valves and without involvement of the pericardium. It is also unusual to observe a patient with coronary sclerosis only, or a patient with a hypertrophied heart from hypertension only, for the reason that experience has shown the high incidence of the coexistence of these disorders. Therefore, the dual association of lesions complicates the differential diagnosis of disease of the heart.

HYPERTENSIVE DISEASE

A greatly hypertrophied heart in the presence of hypertension is obviously an example of hypertensive heart disease. Further evidence is also supplied by examination of the ocular fundi. A similarly enlarged heart without the presence

of murmurs or other distinctive signs in the absence of hypertension presents diagnostic difficulties. In this instance, it must be recalled that well marked hypertension may exist for a considerable period and that ultimately the blood pressure readings may return to normal, or even at times may be below normal. This occurs even independent of heart failure. Here, however, ophthalmoscopic examination may supply the needed evidence to warrant the diagnosis of hypertensive disease of the heart. The association of coronary disease frequently is obvious by the elicitation of a history of angina pectoris, previous cardiac infarction or nocturnal paroxysmal dyspnea. It is well to bear in mind that the coexistence of hypertensive disease of the heart and coronary sclerosis occurs in about 80 per cent of cases coming to necropsy. This fact, therefore, always favors the coexistence of these abnormalities according to the law of probability, although to adopt this dual diagnosis as a routine procedure is, I believe, a practice to be avoided. The electrocardiogram is often of aid in identifying the association of coronary disease. The presence of complete or incomplete bundle branch block lends strong support to the presence of vascular interference. Likewise, elevation and corresponding depression of the R-T segments in antagonistic leads and T-wave negativity, is virtually absolute proof of recent or fairly recent myocardial infarction.

CORONARY SCLEROSIS

Varying degrees of cardiac failure in patients in the middle or latter decades of life, without distinctive physical signs and without unusual cardiac enlargement, should direct attention to coronary sclerosis. This is true even though, as stated previously, the anginal syndrome and attacks of paroxysmal dyspnea are absent. There is an appreciable group of patients with coronary sclerosis who present nondistinctive symptoms, which may vary from dyspnea on undue effort to the classical syndrome of congestive heart failure. These are the cases that are so frequently said to be chronic myocarditis.

In considering this group of cases I stated that examination of the heart did not reveal distinctive physical signs. This statement requires some modification for careful auscultation may often reveal alterations in the character of the cardiac tones. They may be slight, yet experience permits the detection of changes that are significant in identifying serious cardiac disturbance. The cardiac tones are often distant and particularly they may lack definition and differentiation, giving

the impression of a fetal or ticktack type of rhythm. I have learned, in a large percentage of cases, to associate these peculiar sounds with intrinsic conduction disturbances in the ventricles, particularly with complete and incomplete bundle branch block. I have already considered the frequent occurrence of bundle branch block in coronary disease. Certain cases of coronary sclerosis seem to defy detection during life. Symptoms of cardiac insufficiency are absent, the objective examination of the heart does not reveal abnormalities and the electrocardiogram is negative. Such cases are identified by the pathologist, and occur largely in cases of older patients in which such diseases as carcinoma, pernicious anemia, leukemia, and diabetes mellitus are associated.

SYSTOLIC AORTIC MURMUR

The differential consideration of the significance of the systolic aortic murmur is not out of place. I am now considering this murmur in its occurrence without a thrill, thereby dismissing the usual form of aortic stenosis from consideration. The presence of an aortic systolic murmur is frequently considered sufficient evidence for the diagnosis of syphilitic aortitis. This would be justified in the presence of a history of syphilis and a positive Wassermann reaction, but otherwise the diagnosis probably would be wrong. In early syphilitic aortitis, the first objective sign may be that peculiar tympanitic accentuation of the aortic second tone, so well described by Potain years ago, and called by him the "bruit de taborka." Frequently, when intimal roughening has become sufficient to produce a systolic murmur, the aortic second tone still maintains some of its tambour-like quality. Even in the moderately advanced stage of syphilitic aortitis, aortic insufficiency is frequently present. In most cases, if conclusive proof of syphilis is lacking the aortic systolic murmur is evidence of aortic sclerosis.

Again reverting to the patient who presents himself for examination, with or without cardiac failure, and who has as an outstanding sign, a greatly hypertrophied heart, one is confronted by a difficult and interesting differential diagnostic problem. A diligent search in the history of previous illnesses may not be illuminating except for an unidentified infectious episode during adolescence, associated with productive cough and vague pains in the thorax but with apparently complete recovery. Even such a history may be absent or the infectious episode may appear so trivial as to be forgotten. However, in the fourth decade of life, symptoms of cardiac insufficiency occur, gradually leading to congestive failure, ex-

pressed particularly by recurrent ascites, frequently without corresponding edema of the lower extremities. The absence of an apparent lesion of the valve, the absence of hypertension, or the engravure of previous hypertension in the ocular fundi, eliminates several possibilities. The hypertrophied heart excludes primary hepatic cirrhosis. Careful general examination reveals that the hypertrophy is largely confined to the left ventricle, and careful inspection reveals systolic intercostal recessions, frequently quite diffuse, over the left thoracic wall; they may, however, be absent. These data justify the diagnosis of adherent pericarditis. In a review of this history, several suggestive facts are brought out more forcibly: ancient infection, apparently respiratory in origin with presumably complete recovery, then no further trouble for from ten to fifteen years, and then slowly progressive cardiac failure with recurrent ascites, occurring in advance of edema of the lower extremities. The presence of ascites before edema of the limbs I believe is quite important. This syndrome and the associated data may be similar to those occurring in so-called Pick's disease, except that in the latter there is virtually always evidence of pleuritis and frequently involvement of the serous surfaces of one or several joints.

MITRAL STENOSIS

The diagnosis of mitral stenosis is sometimes difficult and it has been said to be the most deceptive of all valvular lesions. In thinking of mitral stenosis, one is likely to think only of the classical picture of the disease so well characterized by a preceding history of rheumatic fever, frequently the associated mitral facies, and on general examination are apical presystolic thrill, systolic shock, crescendo presystolic murmur, and the frank accentuation of the pulmonic second tone. The findings, however, are not always typical; in fact, they are frequently atypical, and unless these unorthodox variations are clearly understood, error in diagnosis is the result.

It is only natural, if the pathologic physiology of mitral stenosis is recalled to mind, that the manifestations of the disease, as expressed by symptoms and the physical signs, will depend to a large extent on the degree of stenosis and the response of the heart and circulation to the abnormal anatomic changes.

It is important to remember that when the degree of stenosis is slight, examination of the patient at rest may not reveal abnormal signs. However, when the patient assumes the recumbent position, or especially when he exercises, one is

frequently astonished at the sudden change of condition when the classical signs of mitral stenosis appear. The presence or absence of some or all objective signs of valvular disease depends to a large degree on rate of circulation, particularly in cases of stenotic lesions and in cases in which cardiac enlargement is only slight.

Diagnostic difficulty also occurs in cases of a large heart with congestive failure, especially when associated with rapid auricular fibrillation. In such cases, the signs are chiefly obscured by the very rapid and irregular ventricular rhythm. The fact that auricular fibrillation is present should direct attention to the possibility of the existence of mitral stenosis, owing to the unusually high incidence of this arrhythmia in mitral disease, especially during the stage of congestive failure. Under these conditions, the murmur is no longer presystolic in time but occurs in diastole, is prone to be short and often is heard only during the longer cycles. This point is significant and a brief consideration of the mechanics of these changes is not out of place. Hardly a day goes by that I do not see a record in which some clinician described a presystolic murmur occurring with auricular fibrillation. In mitral stenosis without auricular fibrillation, the blood is actively propelled by the left auricle into the left ventricle, and this forcible propulsion gives rise to the rough, rather prolonged presystolic murmur. In auricular fibrillation, the auricles are not dynamic and therefore do not undergo contraction so that the blood can no longer be actively propelled into the left ventricle. The only other possibility of ventricular filling under these conditions is that which occurs by its suction action. Thus, the murmur instead of occurring as a presystolic event, occurs in full diastole.

There are still other cases of mitral stenosis that warrant mention, not from the standpoint of diagnostic difficulty but from the standpoint of certain associated phenomena. In certain cases hemoptysis takes place from time to time independent of congestive failure or pulmonary infarction. The full appreciation of this phenomenon should exist, as many of these patients are believed to have pulmonary tuberculosis and are sent to sanatoriums, where they are unnecessarily confined at great financial expense and subjected to anxieties and emotions that could have been spared by correct diagnosis. The heart as a rule is not markedly enlarged, and regular rhythm is usually present. The mechanics underlying this syndrome involves periods of marked increase in intrapulmonary pressure with ultimate rupture of a small arterial branch. The primary burden in

mitral stenosis is assumed by the right ventricle which may become greatly hypertrophied. This produces a marked imbalance between the right and the left sides of the heart, so that the over-active right ventricle may propel more blood into the pulmonary circulation than the left side of the heart can at all times take care of. Hypertrophy of the left auricle tends to overcome this situation and atrophy of the left ventricle, which occasionally occurs, favors it.

In still other cases of mitral stenosis, episodes of acute pulmonary edema occur, the basis of which are likewise periods of increased intrapulmonary pressure. Here, instead of relative failure of the left ventricle, actual failure occurs. This group of cases usually presents evidence of fairly well advanced disease of the heart.

MITRAL INSUFFICIENCY

Pure mitral insufficiency of endocardial origin is an extremely rare condition yet the diagnosis of this lesion is frequently made. It is invariably associated with mitral stenosis. The presence of an apical systolic murmur does not necessarily imply mitral insufficiency; in fact, statistical necropsy data clearly indicate the opposite.

The diagnosis of chronic endocarditis with mitral insufficiency could be ventured with justification provided a history of rheumatic fever or chorea is obtainable, and if examination discloses cardiac enlargement, a rough blowing apical systolic murmur with axillary transmission and with accentuation of the pulmonic second tone.

SYSTOLIC APICAL MURMURS

As a rule, systolic apical murmurs are the result of increased circulation rate, such as occurs in hyperthyroidism and anemia, of ring dilation such as occurs in large hearts and in valvular sclerosis.

Careful auscultation sometimes helps one to distinguish between the organic and the functional apical systolic murmur. When the murmur is actually the result of anatomic insufficiency it is heard well into the axilla, and as the stethoscope is moved outward the first heart tone is lost but the murmur is still loudly audible. With functional murmurs, the converse to this obtains, namely, that as one moves the stethoscope outward, the first heart tone survives the murmur. These criteria are not absolute but frequently are helpful in distinguishing between functional and organic murmurs.

AURICULAR FIBRILLATION

I have already mentioned the frequency with which auricular fibrillation occurs in mitral stenosis. Further consideration of auricular fibrilla-

tion seems warranted in its relationship to the differential diagnosis of disease of the heart. The statement that auricular fibrillation may occur in all forms of disease of the heart may seem confusing. However, I wish only to call attention to the necessity of ascribing definite quantitative values to its occurrence. Sufficient clinical data are now available to show quite accurately the incidence of auricular fibrillation in the various types of cardiopathy, its frequency in some and its extreme rarity in others, so that with utilization of the law of probability, helpful diagnostic criteria are frequently easily available.

The onset of auricular fibrillation, if patients are middle-aged or older, particularly with relatively rapid ventricular rate, in the absence of hypertension or evident valvular disease, should direct suspicion to hyperfunctioning adenomatous goiter. The adenomas may be small, they may be low-lying, or they may be almost entirely sub-sternal and quite easily avoid detection unless carefully sought for. More than a casual acquaintance with hyperthyroidism is usually necessary to enable one to distinguish and properly to evaluate these data. Blood pressure readings, in the absence of cardiac failure, are also helpful differential points. Pulse pressure usually is increased from a slight rise in the diastolic pressure and a material rise in systolic pressure, the average pulse pressure being about 70 mm. These alterations in blood pressure in conjunction with tachycardia are evidences of increased rate of circulation and increased minute output for each beat, in the presence of a relatively open periphery, the result of the elevated basal metabolic rate. Study of the basal metabolic rate permits the application of quantitative values in any given case. It is not unusual for these patients to enter the clinic with the diagnosis of disease of the heart, without reference to the condition of the thyroid gland, yet the patient's only chance for recovery lies in correct diagnosis and reasonably prompt operation. Occasionally, patients are observed, who are known to have adenoma of the thyroid gland, but careful examination, including determination of the basal metabolic rate, does not reveal evidence of hyperthyroidism. The patient is operated on for some other condition, and soon after the operation rapid auricular fibrillation supervenes. In such an event attention should be focused on acute hyperthyroidism, evidently precipitated by the stress of operation. The patients invariably require thyroidectomy as soon as sufficient time has elapsed after the primary operation to permit further intervention with relative safety.

BACTERIAL ENDOCARDITIS

The differential diagnosis of subacute bacterial endocarditis, as a rule, is not difficult. Ordinarily the disease is recognizable by purely physical diagnostic methods, although absolute proof and the identification of the type of bacteria is obtained by blood culture studies. In virtually 95 per cent of the cases, the infecting organism is the streptococcus viridans, whereas the remaining cases represent infection with bacillus influenzae, staphylococcus aureus, and occasionally, with the gonococcus.

The disease virtually never attacks normal hearts but selects those previously injured by rheumatic fever, congenital disease, arteriosclerosis, or syphilis. An antecedent rheumatic valvular lesion is almost the rule, and one that usually has not produced much structural injury. Therefore, in the consideration of febrile illnesses with the question of subacute bacterial endocarditis in mind, a valvular lesion is a prerequisite. The temperature curve is suggestive, being of the irregular type, ranging from 99.6° to 103.6° F., and frequently yielding subnormal readings between the rises in temperature. There may be occasional successive days when the temperature is not elevated.

Since the disease is fundamentally characterized by massive, fragile, vegetation formation, the endocardial thrombus being chiefly composed of blood platelets and bacteria, it may be expected that the main phenomena of the infection will be represented by minute and massive emboli. This is exactly what happens, and a careful search for and a study of the embolic phenomena of the disease invariably permit the diagnosis. These phenomena may occur relatively early in the disease, within three or four weeks after the onset of symptoms, but the average appearance is at the end of three months.

A thorough familiarity with these phenomena is essential and I will briefly review them here: Showers of petechiae are common, occurring particularly over the anterior surfaces of the extremities; the inferior conjunctiva seems to be a point of predilection. I have repeatedly observed petechiae in the inferior conjunctiva when they have been absent elsewhere. When streptococcus viridans is the infecting organism, the petechiae invariably have white centers, and their presence absolutely and irrevocably justifies the diagnosis of the disease.

Tender evanescent cutaneous nodules, occurring particularly on the fingers and toes but also elsewhere, the so-called Osler nodes, are almost

pathognomonic of the disease. Purpura and atypical erythematous lesions sometimes occur but are not characteristic. Clubbing of the fingers and toes are common accompaniments, frequently occurring over as short a period as two or three weeks. Peculiar red lineations are sometimes observed in the nails, reaching out from the matrix and giving the appearance of recent removal of a splinter, the so-called splinter hemorrhages, which, when present, are suggestive of the disease. The spleen is practically always enlarged, the result of infarction, although several months may elapse before its detection is possible. Mycotic aneurysms may occur, and gross infarction is common in the later stages, particularly involving the brain, intestines, lower extremities, and kidneys. Eventually the kidneys become the seat of minute emboli, giving rise to characteristic glomerulonephritis, leading eventually to the picture of diffuse nephritis. Varying degrees of secondary anemia are the rule in subacute bacterial endocarditis.

As has been mentioned, rare cases of subacute bacterial endocarditis are encountered, in which the bacteria disappear spontaneously from the blood stream and the active infectious features of the disease are absent. Although these patients do not recover, life may be prolonged, and during this stage patients may present that peculiar café au lait color of the skin. The fact that the disease practically never occurs in the presence of cardiac failure is an important diagnostic point. In my series cardiac failure occurred in only 0.5 per cent of the cases and these were the only ones displaying auricular fibrillation. These figures are in accord with those of other observers.

CONGENITAL DISEASE OF THE HEART

The diagnosis of congenital disease of the heart is usually not difficult, but identification of the type of lesion is rarely possible with certainty. This is due to the fact that the anomalies so frequently are multiple and often are associated with unsuspected abnormalities of the great vessels. One important diagnostic point that usually holds true is the presence of many loud murmurs in the absence of proportionate symptoms. In the presence of marked cyanosis, especially in infants or children, little diagnostic difficulty is encountered. The clear visualization of enlarged pulsating posterior intercostal and scapular arteries in the presence of elevated blood pressure, leaves little doubt as to the existence of coarctation of the aorta.

JAUNDICE

The occurrence of jaundice during failure of the heart may be a disconcerting feature, and

unless its true nature is understood may lead to a mistaken diagnosis. The belief has been expressed that hepatic congestion is responsible for the jaundice occasionally observed, but gross inconsistency is evident. Congestive heart failure is always attended by hepatic congestion, yet only occasionally is jaundice present. More recent studies have shown that jaundice occurs when rather extensive visceral infarction supervenes, particularly extensive pulmonary infarction, which does not immediately prove fatal. The jaundice

is but the result of hemolysis occurring in the infarcts.

COMMENT

I realize, of course, that I have not been able to consider all the important points of this large subject, but in conclusion I should like to make a plea for the revival of the art of the old clinicians, the cultivation of not only the science of medicine but the art of medicine, and for the preventing of modern diagnostic accessories to overshadow the mastery of physical diagnosis.

THE INTRAVENOUS ADMINISTRATION OF THE GALL BLADDER DYE FOR DIAGNOSIS

BY G. T. NORDIN, M. D.
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I wish to state at the very beginning of this review that the facts were obtained in our own laboratory and the conclusions drawn from my own personal experience, particularly with the intravenous method of administration of the gall bladder dye. During the past four years, we have examined one thousand and eighty-three cases, three hundred and eighty-six of which were with the intravenous method. Before proceeding with these three hundred and eighty-six cases, I wish to review my experience during the past four years with other methods.

At first I used sodium tetraiodophenolphthalein dye in pill form, but found that twelve and twenty-four hours after the administration of the pills, a large number lay undissolved or only partly dissolved in the colon. I then resorted to the capsules containing the dye and found somewhat similar results, although not quite so marked as when administered in pill form. Later an emulsion form of the dye was put on the market and I began using that. This appeared to be superior to either the pills or the capsules, but in my opinion does not compare with the results obtained by the intravenous method. At the present time I have entirely discontinued the pills and capsules and merely keep them as a remembrance of earlier methods. I am still employing the emulsion form whenever the clinician requests it.

Objections to the oral method of administering the dye are that about eighty-five per cent of all cases complain of a certain amount of nausea following the administration of the dye by mouth. About seventy-five per cent of the cases vomit at

some time after the administration of the dye. Sixty per cent experience diarrhea which is quite severe in about twenty per cent of the cases. This diarrhea interferes considerably when one is doing a barium meal examination of the gastrointestinal tract at the same time. It very often happens that the patient comes in for a barium meal examination, and at this examination, secondary evidence of cholecystic disease is found, and the clinician requests a gall bladder study to be made the following day. When the patient has severe diarrhea the colon is practically cleared of the barium material, and, therefore, little information can be obtained at the twenty-four hour examination.

Just recently I have found that if the dye is given during the meal or right after the evening meal instead of two or three hours later, the patient does not complain of as much nausea or vomiting. There is no change, however, in the diarrhea. When the dye is given intravenously, this diarrhea is seldom experienced. Whenever the gall bladder cannot be visualized following the oral administration of the dye, I always administer it intravenously. I have found that five per cent of the cases that did not show any function of the gall bladder following the oral administration of the same, showed a definitely normal reaction following the intravenous method. This increase in the diagnostic accuracy, of course, would favor the intravenous method; but more than that, the almost complete absence of reaction following the administration of the dye makes me lean still more toward this method. In the three hundred and eighty-six cases where the dye was administered intravenously, I have

*Read before the Swedish Hospital Staff, November 10, 1930.

had three cases where an obliterating type of phlebitis of the median vein set in; in other words, less than one per cent.

Occasionally, a patient would vomit after the intravenous administration. These cases were nervous women, and the reactions were probably due more to the neurotic tendency than to the irritation of administration of the dye intravenously. Five cases experienced severe pain in back. The cause for this pain I have not been able to determine. I have written to the manufacturers of the dye asking for information from them and have also written to Dr. Graham in St. Louis, but have not been able to obtain a satisfactory explanation. All cases experience a feeling of warmth and a general flushing of the skin which only lasts about a minute. Our experience has been that the patient usually goes to sleep after the dye has been administered, and sleeps until awakened for the next examination.

The important thing to be remembered in the intravenous administration of the dye is the necessity for the clinician to get the dye into the vein. Like the arsenicals, if it is injected into the soft areolar tissues it produces a tissue necrosis with a slough. For this reason, I have administered the dye myself in practically all of the cases. In one case I was unable to find a vein that I could inject the dye into. In two cases I had the ill fortune of letting a small amount of dye out into the tissues, with a subsequent tissue necrosis and slough. In both cases this was very small in amount and the sinuses of both healed in a short time. Both cases had pathological gall bladders and the sinuses healed before the patients left the hospital following the cholecystectomy.

I wish at this time to take up the technique used in the administration of the sodium tetraiodophenolphthalein dye. Three and one-half grams of dye are dissolved in one ounce of triple distilled water; filtered through filter paper; and sterilized in a boiling bath for twenty minutes. Following this sterilization the dye is put aside to cool. When I first began to administer the dye I did so at body temperature, but found that if I let it cool to room temperature or even cooler, the flush experienced by the patient was very much less. When injecting the dye, I use a thirty cc. syringe with the eccentric tip, and use a twenty-one gauge, one and one-quarter inch needle. I have used different types of needles, but find this to be the most satisfactory. An important thing to be considered is the condition

of the needle. It is necessary to have a very sharp point so that the needle slides into the vein without much pressure and without much pushing. When we first began using the intravenous method of administration, the patient was given a glass of water containing a teaspoonful of baking soda. We find, however, that the patient gets along as well without the soda, but a glass of cold water is advisable.

TECHNIQUE OF THE RADIOGRAPHIC EXAMINATIONS

Films are made previous to the administration of the dye to see if one can possibly visualize the gall bladder or visualize stones. Films are made five or fifteen hours after the administration of same. A fatty meal is then administered and films taken two hours later. Of these examinations, the first is by far the most important. It is absolutely essential that you obtain the coöperation of the patient in order to do away with the slightest motion. The patient is placed in the usual gall bladder position on the Bucky diaphragm table and the tube properly centered. This will depend on the type of patient that you are examining. A small, slender individual is likely to have the gall bladder in the region of the iliac crest, whereas, the short, stumpy, fat individual is apt to have the gall bladder high up under the ribs. A medium sized cone is used for the first exposure, in order to definitely locate the liver margin. For the second exposure a long three inch dental cone is used in the region where the gall bladder would be most apt to be found. This is done in order that we may obtain the best possible detail. At the two subsequent examinations a medium sized cone is again used. The x-ray exposures are for one second, one hundred milliamperes current, thirty inch distance, and the voltage varied according to the size of the patient. It is very important that the gall bladder pictures be taken in as short a time as possible, because of the movement of the surrounding structures of the upper abdomen.

INTERPRETATION OF THE FILM

I consider a gall bladder to be normal if it cannot be visualized previous to the administration of the dye, and if it fills with the dye five hours after the administration of same, and if it decreases to about one-fourth its former size following the ingestion of the "fatty meal." At the same time, the density of the solution within the gall bladder has increased. If the gall bladder shadow has entirely disappeared two hours after the ingestion of the meal, this also is a normal response. Any gall bladder that can be visualized previous to the administration of the

dye, whether or not it subsequently fills with the dye should be considered a pathological gall bladder. At this time I wish to state that it is not only important to determine the condition of the gall bladder, but cases complaining of abdominal distress should also have a careful check-up of the entire gastrointestinal tract. There may be ulcers of the stomach, ulcers of the duodenum, enlargements of the pancreas; there may be a chronic appendicitis, or a spastic colon. All of these conditions should be carefully investigated before the patient is submitted to a gall bladder operation. Many times, too, hypertrophic osteoarthritic changes of the spine give symptoms that suggest gall bladder disease. Again we have kidney conditions that are sometimes confused with disease of the gall bladder. Considering the very moderate charge that we make for a gall bladder and gastrointestinal examination, I believe that every patient should be given the benefit of both.

I now wish to review the findings of two hundred and eighty-one operated cases whose gall bladders have been x-rayed at the X-ray department of the Swedish Hospital. Of these, two hundred and eighty-one cases, eleven were found to be normal by the X-ray. At operation, however, two of these gall bladders were removed and the microscopic examination revealed chronic inflammatory changes in the gall bladder wall. Two hundred and seventy of these cases were found to have pathological gall bladders by the X-ray examination. Of these two hundred and seventy cases thirty-six showed stones previous to the administration of the dye. In an additional sixty-seven cases we were able to demonstrate

stones after the administration of the dye, making a total of one hundred and three cases where stones were demonstrated previous to the operation. These cases show a varied degree of function of the gall bladder. We found that we were more apt to show the cholesterol stones following the intravenous method of administration than we were when it was administered by mouth.

At operation two hundred and sixty-eight cases proved to have definitely pathological gall bladders, and two hundred and twenty-one of these cases had stones. Two patients operated upon, that were diagnosed cholecystitis by means of the X-ray, were thought to be normal at operation. Other pathology was found in the abdominal cavity which was taken care of. In other words, we found that the X-ray diagnosis and that made at the time of operation agree in ninety-eight per cent of the cases. We also found that the diagnosis of stones was correct in forty-six per cent of the cases where stones were present at the operation. This includes all of the cases x-rayed since we began to use the dye. Checking up on those cases that were operated upon this year and also x-rayed in this department, I find that the diagnoses were correct in sixty per cent of the cases, an increase of fourteen per cent during the past year.

Summarizing I wish to say that the intravenous method of administering the dye is the most accurate, and secondly the ability to visualize the gall bladder previous to the administration of the dye is the best criterion upon which to base the diagnosis of cholecystic disease.

THE PUBLIC HEALTH LABORATORY AS AN AID IN SECURING PURE WATER*

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I. WATER AND ITS USE

Those things which we most freely and frequently use and require for our existence naturally have a great influence on our health, and water is one of these substances. Water is a prime necessity of life, it not only enters into the chemical composition of the body to the extent of some 70 per cent of body weight, but those properties that characterize living matter such as movement,

growth, reproduction, respiration, and irritability, all have their physical basis in water and a few common salts. Physiological chemistry has pointed out to us that those activities of protoplasm or living matter such as the transformation of energy, psychic or mental activities, oxidation and reduction in the cell, the intricate chemical transformations constantly taking place in the body such as the digestion of food, its absorption, and oxidation, or addition to the cells, and its final elimination, all depend upon water. It is

*Read at the North Dakota Conference on Operation of Water Purification.

astonishing that living matter, with all its wonderful properties and capacities for growth, memory, intelligence, suffering and happiness, its ability to create the most marvelous inventions as aeroplanes, radio, and Zeppelins, and just as easily to destroy whole cities as to build them in times of war, this living substance is composed of 70-80 per cent of nothing more complex or mysterious than water, no gold, silver, platinum or radium, just ordinary water and a few common elements.

The external use of water is almost as important. We use it for bathing and cleansing the body, clothing, and other articles, and for cooking.

Just as necessary to the city as to the individual is water. No great center of population can develop without an abundant supply of pure water, and Bismarck is fortunate in having at its doors an inexhaustible supply of easily purified, potable water. Cities must have water for manufacturing purposes, sewage disposal, street cleaning, and fire protection, and if possible swimming pools. We can now readily see that there could be no personal or public health or thriving centers of population without an abundance of pure water.

II. PUBLIC HEALTH LABORATORIES AND WATER

Individuals and cities derive this necessary article usually from rivers, lakes or wells. Since rivers are but the natural sewers of the country they drain, they are practically always polluted, contaminated or infected with disease producing organisms derived from human and animal wastes in the drainage area. It is, therefore, necessary and imperative that cities provide themselves with filtration plants to purify the water and make it potable. In Bismarck, Fargo, and Grand Forks, the State Laboratory supervises the chemical treatment of raw water and checks the finished product bacteriologically and chemically. The filter plant operators have only to submit their problems to us and we give them all possible aid. The individuals of the state are not neglected. At their request we send them one of our standard water containers in which they may send a sample of their private well water, and we perform the analysis and make an interpretation of the results free of charge. Last year we performed 48 chemical analyses and 1,602 bacteriological examinations of water.

III. LABORATORY EXAMINATION OF WATER

A. Collection of sample. Our water container consists of a zinc lined case, a smaller inside zinc box, large enough to hold a glass stoppered six ounce bottle. The bottle is sterilized at the laboratory and is ready for use. At the time of collection, the glass stopper is carefully removed without touching its inner surface, and the bottle is

almost filled directly from the water to be examined, the stopper is returned and tied into place, the bottle placed in the inside box, and this placed in the larger case, which must be filled with cracked ice to preserve the water at a low temperature. These directions must be carefully followed, otherwise the results are useless. Upon arrival at the laboratory, the analysis is immediately started. This resolves itself into two procedures, (a) chemical analysis and (b) bacteriological examination.

The chemical analysis consists of evaporating a litre of water to dryness and analyzing the residue, which consists mainly of organic matter and the various salts held in solution, as the carbonates and bicarbonates of calcium and magnesium, iron, aluminum, sodium, potassium with their acid radicles other than carbonates. From the data we calculate the hardness of the water and the best method of treatment to render it clear and soft. Ordinarily if a water has no salty or bitter taste, and forms soap suds readily, no chemical analysis is indicated.

The bacteriological analysis is of far the most importance ordinarily, since through it we receive the information relative to the possibility of the water being a conveyor of a water borne disease, such as typhoid, dysentery or other intestinal infections. Upon the arrival of the water at the laboratory we start the bacteriological examination immediately. First one cc. (16 drops) of water is placed in a sterile Petri dish and a tube of melted agar is poured upon it and allowed to solidify somewhat like gelatine. The plate is incubated over night and in the morning the organisms in the water and immobilized in the agar have developed into visible colonies and are counted. This gives the total number of organisms per cc. At the same time when the plate is poured, the second part of the investigation is started, which has for its aim the detection of the colon bacillus. This organism, found in the intestines of humans and animals, while not particularly pathogenic in itself, is the best index or indicator of contamination that we have. Colon bacilli found in water indicate that intestinal discharges are finding their way into the water, and it would, therefore, be possible and even probable that disease producing organisms found in conjunction with the colon bacillus in the intestines, would also be present in the water. We, therefore, seek for the colon bacillus and if it is found, the water is immediately under suspicion and is considered unsatisfactory for drinking purposes. Since we wish to prevent disease, we do not wait until we find the disease producing organism it-

self, we just look for the bad company in which it may be found and then pronounce the water nonpotable. The technique for finding and identifying this organism is complicated and I will rapidly demonstrate it. Lactose fermentation tubes with and without gas and positive and negative Endo plates shown.

There are many special examinations for various types of organisms but the above procedure is the ordinary routine examination.

As to the frequency of examination of a water supply. In Bismarck we examine it bacteriologically and chemically every day. Some cities send in their water samples every week, some every month. I would say the more frequent the better, certainly once a month at least. It would be well if every city in North Dakota provide itself with water containers to send in samples as this would eliminate the necessity of waiting for one from the laboratory, as our supply is naturally limited and in use most of the time.

A word on the interpretation of the results of a bacteriological examination. By experience we find a satisfactory drinking water should contain not more than 100 bacteria per cubic centimeter, and not more than two colon bacilli per 100 cc. of the water. These are the United States Public Health Service standards and the same we use in our laboratories. If more than one hundred organisms per cc. are encountered in a water, or more than two colon bacilli per 100 cc. we consider the water contaminated to the point where it is unsatisfactory for human consumption.

The control of these water borne intestinal infections through sanitation, the provision of pure drinking water together with other factors has been one of the greatest achievements in Preventive Medicine. The once prevalent Scourge-Typhoid Fever has been conquered by Science and now takes its place among the second rate diseases.

THE TREATMENT OF ULCERATIVE COLITIS BY MEANS OF A BACTERIOPHAGE

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It has been found by Cannon (1) that a diet high in carbohydrate caused marked increase in the gram positive bacteria in the intestinal tract. On a diet high in lactose, the predominating organisms are gram positive, consisting chiefly of bacillus acidophilus and bacillus bifidus. When acidophilus milk is given in place of lactose, the predominating organisms are streptococcus lactis, and a much smaller number of bacillus acidophilus. So it seems that a high lactose diet causes the formation of many more acidophilus bacilli than acidophilus milk itself.

Goldman (2) found that a diet high in protein, especially animal protein, caused a marked increase of gram negative bacteria in the intestinal tract. Bacillus coli and bacillus Welchii seem to predominate. It was also found by Goldman that fats do not cause any marked change in the intestinal flora.

It was suggested by Berglund (3) that a change of intestinal flora might be of some value in the treatment of ulcerative colitis. At this time there were eight patients on the medical service at the University Hospital of the University of Minnesota. These patients had been on this service for varying periods of time and all of them had been

placed on a low residue diet. On all of the patients, the ulcerations could be seen by means of the proctoscope and sigmoidoscope. In addition to diet and general care, these ulcerations had been treated with local applications of five per cent (five per cent) mercurochrome. Under this treatment some showed improvement and others not.

Dr. Berglund thought that by changing the intestinal flora by means of lactose feeding and acidophilus milk that the condition might be improved. Four of the patients were given one liter of acidophilus milk three times daily, while the other four were given a low residue diet to which had been added considerable quantities of lactose. It was found that after three days there was a marked preponderance of gram positive organisms the same as reported by Cannon. The patients were kept on these diets for two weeks with no apparent improvement in clinical symptoms or decrease in the size of the ulcerations. So this diet was discontinued.

Following this it was thought that possibly the D'Herelle phenomenon or bacteriophage might be of some value in treatment. Cultures were made from the ulcerations of each patient. The swabs

taken were planted on blood agar and litmus lactose agar plates. A considerable amount of contamination would be expected, but it was found that after twelve hours incubation, four of the plates contained pure cultures of bacillus pyocyaneus. The other four plates contained mixed cultures of bacillus coli, bacillus proteus, bacillus sporogenes, and streptococcus hemolyticus.

In the making of a bacteriophage from the mixed cultures it was thought best to use them in mixed cultures and not to isolate them into their various groups.

The manner in which a bacteriophage was prepared for each culture was by taking samples of water from the Mississippi river near the entrance of a sewer, as this would aid in securing as many intestinal organisms as possible. Ten cubic centimeters of this water was added to five hundred cubic centimeters of beef broth bouillon, and incubated for a period of thirty-six hours. One cubic centimeter of this material was then added to ten cubic centimeters of a beef broth culture of the organisms obtained from the ulcerations of each individual patient. This method had to be repeated numerous times with many samples of the river water before a bacteriophage was obtained for each culture. After repeated incubations this bacteriophage would cause a lysis of ten cubic centimeters of the beef broth culture in about fifteen minutes. Large quantities of the bacteriophage could now be made very readily by adding one or two drops to a flask of 1,000 cc. of beef broth and incubating it for twelve hours.

Each patient was given two liters of the bacteriophage daily by mouth. It was made more palatable by adding flavoring and fruit juices. One liter was given daily by Murphy drip, one-half cc. was given subcutaneously daily, and one liter was used in the form of an enema. The four patients from whom pure cultures of bacillus pyocyaneus had been obtained showed marked improvement after three days of treatment. After three weeks treatment there was a considerable decrease in the size of the ulcerations, and in six weeks there were no clinical symptoms and no evidence of ulceration.

The group that apparently had mixed infection in the ulcerated area did not seem to respond to this type of treatment nearly as well. In two of the patients there was considerable improvement after two weeks treatment and also some decrease in the size of the ulceration. But the improvement was not nearly as marked as in the cases with a pure bacillus pyocyaneus infection. At the end of an eight week period these patients

were discharged from the hospital in a much improved condition. But there were still evidences of ulceration on proctoscopic examination. The two remaining cases in this group did not receive much relief from this treatment and became quite nauseated from taking the bacteriophage by mouth. This treatment was discontinued and the patients again placed on a low residue diet with local applications to the ulcerated area.

SUMMARY

(1) Changing the intestinal flora in the cases of ulcerative colitis did not seem to cause a betterment of the patient's condition or cause a decrease in the size of the ulcerations.

(2) Diets high in protein caused a predominance of gram negative bacteria in the intestinal tract, while a diet high in carbohydrate caused a marked increase in gram positive bacteria.

(3) A bacteriophage seemed to give quite good results when used in the treatment of ulcerative colitis, especially when there was a specific infection in these ulcerations. The four patients whose ulcerations were due to the bacillus pyocyaneus, showed marked clinical improvement, with a complete healing of the ulcerations.

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*Read before the South Dakota State Medical Association at Sioux Falls, South Dakota, May 20 to 22, 1930.

TELESCOPIC VISION AND MEDICAL ECONOMICS

ERNEST E. IRONS, Chicago (*Journal A. M. A.*, July 26, 1930), discusses in detail the personal relationship of the physician to the patient; the cost of medical care, hospital care and of laboratory methods and specialists; group clinic; clinics for venereal disease; medical care in rural communities; the passing of the family doctor, and governmental philanthropy and state medicine. He concludes by saying that medicine offers to the public more today than ever before, and promises still more for the future. Its guiding genius is that of personal service, given in a spirit of helpfulness and sympathy. The physician is an individualist who believes in coöperation. In opposing measures which threaten the voluntary confidential relation of patient to physician, he is actuated not by selfish motives but by the knowledge that such measures will result in deterioration rather than improvement of the quality of medical care of those whose lot they are designed to benefit. In attempting to deal with the purely medical phases of these problems, the danger to medical organization is not that it may fail to voice medical opinion but that it may adopt methods of action of a trade rather than a profession.

CLINICAL PATHOLOGICAL CONFERENCE

By E. T. BELL, M.D.

Department of Pathology, University of Minnesota
MINNEAPOLIS, MINNESOTA

The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1510.

The case is that of a white woman, 49 years of age, admitted to hospital August 19, 1930. First admission July, 1930, when she stated that her present trouble began 11 years ago, following the birth of her last child. At that time she began to have attacks of pain under the right costal margin. The attacks were intermittent in character and showed both qualitative and quantitative relation to food. She had no jaundice during any of these attacks. Beans and cabbage were particularly apt to bring on the attacks. She would belch gas and expel gas through the anus during these attacks. About May, 1930, the attacks began to be more severe and would come on whether the patient ate any food or not. She would feel hungry but would not eat because of fear of bringing on pain. She also gave a history of urinary frequency, urgency, incontinence, and pain in the region of the bladder.

Physical examination in July, 1930, showed no jaundice. The heart was thought to be slightly enlarged. There was pain and tenderness over the right kidney and over the bladder. The urine was negative. Blood: hemoglobin 82 per cent; white cells 8,250. Phenolsulphonephthalein 43 per cent in two hours. Wassermann negative. X-ray examination showed enlargement of the right kidney, which was regarded as hydronephrosis. Cystoscopic examination supported this diagnosis. The Graham-Cole test indicated a pathologic gallbladder. The patient received repeated irrigations of the right kidney pelvis and was discharged on July 30 with instructions to return after a period of three weeks. The diagnoses were chronic cholecystitis and infected right hydronephrosis. Inasmuch as the patient weighed 240 pounds, she was put on a reducing diet to prepare her for operation on the gallbladder.

She was readmitted on August 19. She stated that she had noticed a yellowish discoloration of her skin first on August 17. On admission she complained of pain under the right costal margin, radiating to the back and the right shoulder. She was deeply jaundiced. There was marked food distress and marked constipation. The urine had been dark and smoky for about one week. She was continuously nauseated and vomited a good deal. There were repeated eructations of gas. She also complained of precordial pain and dyspnea. She had lost about 30 pounds in weight since she was discharged. She was very drowsy, listless, and deeply jaundiced.

August 19, 1930, hemoglobin 90 per cent; white cells 10,000; polymorphonuclears 61 per cent; lymphocytes 39 per cent; icterus index 112; urea nitrogen 9.33 mg. August 22, slate colored stools; no bilirubin; no urobilin. August 25, icterus index 96; urea nitrogen 15.8. September 4, bleeding time 4 minutes 15 seconds; clotting time 4 minutes 30 seconds. September 5, icterus index 128. September 9 phenolsulphonephthalein 55 per cent; clotting time about 15 minutes.

Urine, August 20, specific gravity 1019; no sugar; no albumin; numerous leucocytes. August 21, bilirubin positive; no urobilin. Further urinary studies essentially the same.

The patient was prepared for operation. On September 10, operation revealed a tense, distended gallbladder which on puncture yielded a thick, dark bile; there were no stones. The head of the pancreas was large and hard. The common bile duct was extremely dilated but no stones were felt. The gallbladder was anastomosed to the stomach. Following the operation a blood transfusion of 1100 cc. was given. There was no fever at any time either before or after the operation. The patient became very drowsy, pulse became rapid, and the blood pressure fell. Hemoglobin fell to 30 per cent. The jaundice decreased.

September 12, hemoglobin 33 per cent; red cells 1,720,000. September 15, hemoglobin 42 per cent. September 29 icterus index 36; October 8, icterus index 16. October 9 hemoglobin 85 per cent. Bleeding time 3.5 minutes; clotting time 13.5 minutes. October 14, icterus index 34. Death October 14, 1930.

Post-mortem report. The peritoneal cavity contains 300 cc. of clear, straw colored fluid; no leakage from the anastomosis between the gallbladder and the stomach. The heart weighs 350 grams; no disease. The lungs show no disease. The head of the pancreas is firm and hard and filled with hard masses.

Microscopic examination shows this to be a carcinoma of the head of the pancreas. The carcinoma compresses the lower end of the common bile duct. There are two small metastases in the spleen and the liver is filled with carcinomatous nodules. The right kidney shows mild hydronephrosis.

Diagnosis. 1. Carcinoma of the pancreas with obstruction of the common bile duct and metastases to the liver and spleen. 2. Mild right hydronephrosis.

Comment. The patient's symptoms some years ago were probably due to the hydronephrosis following pregnancy. The symptoms from the renal lesion gradually

blend into those caused by the carcinoma of the pancreas. The carcinoma certainly dominated the picture from the time of the appearance of the jaundice. Because of the long history, the jaundice was thought to be due to a gallstone impacted in the common duct. It is often impossible to decide between carcinoma of the pancreas and an impacted gallstone without exploratory operation.

Autopsy—30—1463.

Male, 52 years old, admitted to hospital September 22, 1930, complaining of blindness in both eyes and occipital headaches occurring in attacks. His speech was incoordinated and senseless. History obtained through an interpreter. Patient was well until two years before admission when he began to lose the sight in both eyes. The eyes were operated upon, presumably for removal of cataracts. In December, 1929, he was forced to quit work because of total blindness. During this time he also suffered from occipital headaches which occurred about twice a week. The attacks of headache were associated with flushing of the face and decreased vision. During the attacks the patient would be angry and his speech was senseless. His speech and mentality failed notably within the six months preceding admission. Occupation, laborer.

Physical examination showed absence of the lens of each eye; bilateral iridectomy. Examination of the eyegrounds revealed atrophy of the optic nerve. Otherwise the physical examination was negative.

Patient was incontinent. He mumbled continually and his speech was usually meaningless. He was very restless and uncomfortable. He was easily excited when anyone came into the room.

Laboratory. September 22, hemoglobin 106 per cent; white blood cells 6,550; polymorphonuclears 61 per cent; lymphocytes 39 per cent. September 23, blood urea nitrogen 18.6 mg. September 27, spinal fluid was clear, colorless, and under pressure of 360 to 460 mm. of water; four cells present; Nonne positive; Wassermann negative.

September 24, urine showed specific gravity 1023; alkaline; no sugar; no albumin; no casts.

X-ray examination of the skull did not reveal a tumor. On October 4 it was noted that the patient was incontinent and cyanosed and that there was much mucus in his throat. He could not be roused. The cyanosis continued and respiration became labored. His pulse became weak and very rapid. At 1 P. M. October 4 the temperature, which had previously been normal, rose to 105.6° and Cheyne-Stokes respiration appeared. Death October 4, 1:09 P. M.

Post-mortem report. Old adhesions in the right pleural cavity at the apex and the base. Heart 400 grams; no disease. Lobar pneumonia involving the right lower lobe. In the anterior portion of the left frontal lobe of the brain is found a large firm encapsulated tumor, which is strongly attached to the dura on the floor of the right anterior cranial fossa. The tumor is easily shelled out of the brain. It presses upon the left optic nerve and the optic chiasma.

Microscopic examination revealed a psammoma.

Diagnoses. 1. Psammoma involving the right frontal lobe and optic chiasma. 2. Lobar pneumonia.

Comment. Tumors that involve the frontal lobes do not present localizing symptoms. Possibly the tumor might have been localized by ventriloquy.

Autopsy—30—1680.

The case is that of a white man, 50 years old, who was admitted to hospital on November 10, 1930, at 3:10 A. M., complaining of loss of hearing in the left ear, a feeling of oppression in the left side of his head, short fainting spells, and a peculiar sensation of walking on air. These symptoms were noted about two weeks before admission. The first symptom was the feeling of oppression on the left side of his head. Next he noticed that, while working, he had spells of faintness but never lost consciousness. For the week before admission he noticed a diminution in hearing on the left side. On November 7 he had two periods of unconsciousness which lasted for only a short time. He was found unconscious at 1 A. M. on the morning of admission to the hospital.

On admission the blood pressure was 166/104. The patient was well developed, well nourished, and unconscious. Breathing was stertorous. There were moist rhonchi in the throat. There was no evidence of cyanosis or edema. The patient was perspiring profusely and showed a peculiar pallor of the skin. The pupils reacted to light; the left was larger than the right. At the time of the physical examination the blood pressure was 138/82. Nothing could be heard in the chest because of the coarse râles in the throat. The heart and abdomen showed nothing of note. There was apparent paralysis in both lower extremities. The Babinski was positive on the first examination, but later it was found to be negative.

The patient was afebrile on admission, but the temperature rapidly rose to 107°. A blood count was normal except that it showed 14,500 leucocytes with 85% polymorphonuclears. A blood chemistry showed the creatinin to be 1.9 mg.; urea nitrogen 30 mg. per 100 cc. of blood. The patient never regained consciousness and died November 10, 4:20 P. M., about 12 hours after admission.

Post-mortem report. The heart weighs 500 grams; there is hypertrophy of the left ventricle and dilation of both ventricles; narrowing and calcification of the branches of the left coronary artery; numerous myocardial scars in the left ventricle. Marked edema and congestion of the lungs with beginning bronchopneumonia. Complete thrombosis of the basilar artery, apparently on the basis of atherosclerosis; slight softening in the region of the left basal nuclei.

Diagnoses. Thrombosis of the basilar artery following atherosclerosis. Rather marked coronary sclerosis.

Comment. Death was evidently due to thrombosis of the basilar artery. Probably the vessel was not completely thrombosed at first. Gross softening does not occur immediately after the occlusion of an artery.

AGE OF PATIENTS OPERATED ON FOR SENILE CATARACT

The age curves presented by HARRY S. GRADLE, Chicago (*Journal A. M. A.*, Sept. 13, 1930), of 4,730 patients operated on for senile cataract by twelve different operators in various parts of the world showed surprising unanimity. Practically 40 per cent of all senile cataract operations are performed between the age of 60 and 70 years, with an average of 65. The nationality of the patients and the type of operation, whether intracapsular or extracapsular, seems to play but little rôle in the age curve, although a noticeable difference occurs in comparing the ages of Caucasian and Indian patients.

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The Minnesota Academy of Medicine
The Soo Railway Surgical Association
and The Sioux Valley Medical Association

MINNEAPOLIS, JANUARY 15, 1931

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ANNOUNCEMENT

We are pleased to announce that Dr. E. L. Tuohy of Duluth, Minn., has become a member of the Board of Editors on the Journal-Lancet. We know that our readers will enjoy becoming better acquainted with Dr. Tuohy through this association and we want to take this opportunity of welcoming Dr. Tuohy into our circle of editors and advisors.

PUBLISHERS.

SERUM THERAPY AND THE WHITE HOUSE CONFERENCE

Probably no greater gathering of human minds and intelligence in the history of the United States, and that nearly means the world, has equalled the recent White House Conference on Child Health and Protection. The great minds of statesmen formed the Union of States out of widely distributed colonial settlements. There we had quality, but today we have quality plus quantity. An exceedingly interesting fact was developed in the tabulation of answers to questionnaires sent to thousands of physicians throughout the country under the item "Immunization." Ninety-one per cent of the pediatricians reported that they urged such practice, while only seventy-five per cent of the general practitioners felt it incumbent upon them to urge such a well recognized public health measure. One half of one per cent of the pediatricians of the country, and one per cent of the general practitioners of medicine, stated that they did not believe in it. This refers principally to diphtheria immunization. If these figures are truly representative, there are upward of five thousand practitioners of medicine in the United States who will not offer scientific prevention to the little children under their professional care. When we add to this number the thousands of irregulars practicing their form of the healing art under State license, the situation in a civilized country for the protection of the youth of our nation against preventable diseases is appalling.

Smallpox vaccination as an established scientific procedure has been in the hands of the physicians of the world more than one hundred and thirty years. Diphtheria immunization by inoculation has been practiced for fifteen years, and scarlet fever prevention by means of artificial immunity has been practiced nearly seven years. Vast improvements have been made since the original pronouncement of these scientific discoveries, until today serum and vaccine therapy are well recognized and successfully practiced procedures. Smallpox has been eradicated and

prevented. Diphtheria has been entirely removed from the category of human disease in several sections. Scarlet fever has been prevented or modified, and yet the "enlightened" physician of today does not believe in it. Why? There are primarily two reasons. The first one is that these established methods of prevention have been adopted and promulgated by the workers in the field of public health. As a scientific agency in the hands of the physicians of the country, this propaganda by another force has been distasteful. The second reason is that certain physicians are opposed to certain agencies, because from the commercial point of view they cannot sell a guarantee, and feel that the failures of immunization at their hands are reflections upon their professional integrity, and yet the physician in all of his fields takes chances with much more dire results. The greatest expression of intolerance is that induced in the minds of the physician by the request, or even demands, of his patients for certain practices that they bring to him from the fullness of their own lay knowledge.

And so, the world reads from the White House Conference reports the disagreement among the physicians to whom they must trust their health and their lives. Can this smudge be removed? For removed it must be, to keep the guardians of the science of medicine, both preventive and curative, in the faithful trust of their people. Axiomatically, smallpox vaccination prevents smallpox, diphtheria immunization prevents diphtheria, scarlet fever inoculation prevents scarlet fever, not fully, not completely, not one hundred per cent, but still enough to warrant its adoption wholeheartedly, and practically, by every practitioner of medicine throughout the land. What have these nonbelievers, these faint hearted custodians of our health and lives, to offer as a substitute?

F. E. HARRINGTON, M. D.

SANITATION AND RECREATION

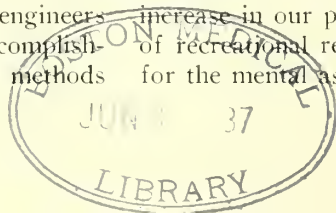
Public health is dependent in many ways upon sanitation. Hard won discoveries of scientific giants put to practical application have conquered many diseases which once plagued the civilized world. Great water borne epidemics are terrors of the past. The elimination or control of intermediary hosts, the purification of food and water supplies, and the destruction of dangerous refuse have worked miracles. Physicians, bacteriologists, entomologists, chemists, physicists, and engineers all have had their share in these great accomplishments. Yet, in spite of known practical methods

of control of sanitary problems and widespread general education on such matters, an anomalous condition exists. We take water from a river to supply our needs, and later pour it back into the river as raw sewage for the fellows down river to clean up for their use, while up river from us other communities are dirtying our water. We thoughtlessly or selfishly make more work for our down river neighbors, and at the same time destroy an easily accessible playground for our own people.

Man's evolution from water animal to land animal has not progressed so far that he can be entirely happy without water recreations. Industrial waste has destroyed many miles of river for recreational delights. Refuse dumps on river banks and lake shores are common eye-sores. Both are comparable to a village in which the inhabitants throw their garbage and other refuse into the streets. There are no more depressing sights than those seen in some great industrial areas where streams are polluted beyond comprehension, discolored, stinking; with the sores of human indifference always in sight, be they great slag dumps, mine refuse, oil field waste or piles of domestic refuse generously salted with the ubiquitous empty tin can.

The health of our people demands clean water for domestic use. Although purification of river water will always be necessary in any populous country before it is safe for household use, it is more economical to start with relatively clean water. The expense of prevention of pollution enters into the situation both in sewage disposal plants and in the riddance of industrial wastes. At the present time many sportsmen's organizations, nature clubs, and other conservation minded groups are spreading the gospel of outdoor play, and are seriously attacking the water pollution problem, frequently taking the lead in demanding sewage disposal plants in their own cities and towns. Manufacturers in many states are spending money for research into the problems relating to the disposal of their own particular wastes, oft-times finding in the results obtained an economic advantage to themselves as well as to the community.

The economic value of river and lake in food production is no inconsiderable asset. Pollution of waters either diminishes this resource or entirely destroys it, and at the same time ruins the value of such waters for recreation. The increase in our population makes this destruction of recreational resources more and more serious, for the mental as well as the physical welfare of



human beings demands adequate opportunity for healthful diversion.

There will always be some people who care little or nothing for the public health or for the recreational value of the natural beauties God put in this world. For such, stringent laws vigorously enforced are necessary for the protection of public rights.

Our great Northwest is especially blessed with natural beauties, and much of our area has such exceptional value as a playground that it will be used more and more by millions of our fellow countrymen. Our guests are largely paying guests, and consequently many of our citizens have a financial interest in making these playgrounds as healthful and otherwise attractive as possible.

The prevention and elimination of water pollution is of value then to the entire population. Team work is necessary to hold and regain this asset of our country. The medical profession plays only one position on the team but it is a most important position. We can and should back up our State Boards of Health wherever our representatives have put this problem under their control, and we should make every effort to encourage our legislators to make sufficient appropriations for the efficient enforcement of laws governing water pollution.

H. M. N. WYNNE, M. D., F.A.C.S.

BOOK NOTICES

VARICOSE VEINS. With special reference to the injection treatment. By H. O. McPheeters, M.D., F.A.C.S. Illustrated with halftone and line engravings. Second revision and enlarged edition. Philadelphia: F. A. Davis Company, 1930. Price, \$3.50, net.

"Varicose Veins," by Dr. H. O. McPheeters, is a small volume but covers a large field. It is written in a concise form and goes into details on the important points in treatment of the veins and the complicating ulcers. It gives a very good summary of the anatomy, etiology, diagnosis and tests to be used in making it.

In the last few chapters the pathology after treatment and the various changes in the vein as it becomes sclerosed is taken up. The author then goes on to tell of the possible complications after treatment and the best way to handle them.

This book makes one feel that the profession up until the last few years have been making very hard work of something that can now be easily cured.

—ADAM M. SMITH, M.D.

MENTAL ASPECTS OF STAMMERING. By C. S. Bluemel, M.A., M.D., L.R.C.P. (Lond.), M.R.C.S. (Eng.). Ppg. 152. Baltimore: The Williams & Wilkins Company, 1930. Price \$2.50.

This is an excellent monograph on stammering. It is based upon many years of careful study of this common and serious handicap, and at the same time offers to the patient himself as well as to the student of the subject what seems to be sound practical therapeutics. The author looks upon stammering as an impediment of thought rather than that of speech. He believes the most common causes are emotional rather than physical or physiological. He cites many convincing cases to prove his point, that fright, imitation, and excitement, are the chief causes. He presents an interesting if not an entirely substantiated idea, that various associated tics which often accompany stammering, are also the equivalent in function to the stammering itself. In fact, he goes so far as to consider many nervous functional disturbances as "stammering." In this connection he refers to stammering in walking, in swallowing, and in breathing. What others call occupational neuroses, i. e., in the use of the piano, typewriter, and violin, he calls stammering with instruments. Cardiospasm he prefers to label stammering of swallowing. His chapter on speech correction is simple enough for any layman to understand. He treats children differently from adults.

The treatment of stammering is not as simple as the giving of a drug for a medical disease. The causes are complicated, and a successful cure requires the energetic cooperation of parents, teachers, and patients. The one most important measure is the early recognition of the impediment before the child enters school if possible, in order that remedial measures may be applied before the disturbance becomes engraved in the child's psychology. Furthermore, the treatment should be continued long after the stammering has disappeared in order to safeguard against remissions. His treatment briefly consists of mental drill, signals, speaking in unison, silent speech, relaxation, slow speech, and training in breathing. This is the most concrete, practical, and at the same time cautious presentation of a most neglected, common, functional disorder that has come to the attention of the reviewer.

MAX SEHAM, M.D.

The Tri-County Medical Society meeting held at New Rockford, N. D., December 10, 1930, reported the following for publication in the *Journal Lancet*:

Motion made, seconded and passed unanimously that; Whereas, due to our peculiar status in a community we cannot avoid doing charity work in certain emergencies,

And whereas, we are already burdened in rendering services to the poor,

Be it resolved: That this Society go on record as opposed to our members being obliged to further contribute to charity drives, or to furnish free services and free examinations for visiting clinics, government training camps, etc. Carried.

After a lengthy discussion it was moved and seconded that members of the Tri-County Medical Society make a regular charge based on the North Dakota Workmen's Compensation Bureau fees in the care of the county poor and that they enter into no contract with a county or city to care for the county poor. Motion carried.

A. F. HAMMARGREN,
Secretary, Tri-County Medical Society.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.
Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

Who's Who in Public Health in North Dakota



Will H. Moore, M.D., City Health Officer of Valley City, North Dakota. Dr. Moore is considered the most active health officer in North Dakota. He is prompt in his correspondence reports and gives specific details. He is intensely interested in public health work and gives his special attention to the treatment of venereal diseases. For many years he has reported and kept under active treatment all cases of venereal diseases occurring in Valley City and surrounding

country, and since his appointment as City Health Officer has succeeded in getting the local physicians to co-operate, and has thereby, with the help of the City Administration, placed many of the sources of infections under active and continued treatment. He has brought in the contacts for examination and prolonged observation, with the result that Valley City has become one of the cleanest communities in the State.

Will H. Moore was born at Bay City, Michigan, December 15, 1875, the son of Walter P. Moore and Rebekah Harding. He was educated in the public schools of Bay City, was court reporter in Chicago, and in 1903 was graduated from the Medical Department of the Illinois University; member of Phi Beta Pi Fraternity; was associated with Dr. Bayard Holmes, Sr., for four years; practiced in San Diego, California, in 1907-1908, and moved to North Dakota in 1908. He was married in 1904 to Grace E. Morrell, of Oak Park, Ill. They have three children, Donald, Gordon and Colin. He is Secretary of the Sheyenne Valley Medical Society; City Health Officer; commissioned Capt. M. C. U. S. A., October 2, 1918; honorably discharged January 15, 1919, now Capt. in the Med. O. R. C.; and takes an active interest in municipal affairs; Vice President of State Health Officers' Association; a member of State Medical Society; A. M. A., and the Valley City Clinic.

The State Health Department knows of no more impressive grand finale before the curtain drops on 1930 than to present Dr. Will H. Moore as an addition to Who's Who in Public Health for the last quarter beside the other recipients of this honor Robert W. Allen, M.D., A. M. Limburg, M.D., and C. C. Campbell, M.D.

Happy New Year

The Health Department wishes you twelve months of happiness and prosperity, and not forgetting health. Health, of course, is our chief aim and the reason for our existence, and we hope that 1931 will be an outstanding, successful year for all of you.

1930 Census

North Dakota's population increased 33,973 or 5.3 per cent during the last ten years, according to complete figures released by the United States Census Bureau recently. The State's population for 1930 is 680,845.

Hospitals Attention

Will you make an effort this year to see that the birth certificates state the name of the hospital where the child was born? We are making a special effort this year to find out how many births actually occur in hospitals. Have your name on every birth certificate. Use a rubber stamp or any convenient method. Sending in the hospital reports the fifth of each month will help a lot, too.

Vincent's Angina

As the result of a special letter sent to all dentists in North Dakota, Vincent's Angina reports are much more complete. Fifty-two cases were reported in November. The disease is much more prevalent than is ordinarily supposed, and every case should be immediately reported to your local health officer. Several deaths from this disease have also been reported recently.

The Decedent's Name

The task of filling in the name of deceased should not be left to the undertaker or some other person without review by the physician. Some ghastly and amusing errors occur. Sometimes the informant is so unfortunate as to have his name placed on that line, and he is calmly laid to rest while, all unknowing, he attends his own funeral. How is a certain very oriental little lady going to join her celestial ancestors when her death certificate very plainly states that she is white? The date of death should always be written in, as we cannot always accept the day the doctor last attended deceased as the date of death. The attending physician, for his own protection, should write in the "vital" facts himself. No one knows what litigation may result from any death, and twenty or thirty years hence some one will want a certified copy of the certificates you are now signing, and you may not be here to make the corrections.

Pneumonia Time Is Here Again

Lobar pneumonia is a communicable disease as well as a preventable one in most instances. The pneumonia season has now arrived and is "at home" for the next two months. Very much at home. More deaths occur from this disease in January and February than during any other season, and more deaths from pneumonia and "flu" pneumonia than from any other cause. There were far more deaths last January than in any other month, over 200 more, in fact, and these were due to "flu" and pneumonia. State what kind, please, when filling in death certificates. It will save correspondence.

Coöperation

In asking your coöperation we are always willing to reciprocate. If we have any working material you might need, just write to us or call us on the 'phone and we will act promptly. If you don't believe in coöperation, just watch what happens to a flivver when a wheel flies off.

PROCEEDINGS MINNEAPOLIS SURGICAL SOCIETY

Meeting of December 4, 1930.

The regular monthly scientific meeting of the Minneapolis Surgical Society was held in the lounge of the Hennepin County Medical Society in the Medical Arts Building on Thursday evening, December 4, 1930, at 8 o'clock.

The meeting was called to order by the Vice President, Dr. Theodore Sweetser, in the absence of the President. There were 28 members and 3 visitors present.

Minutes of the November meeting were omitted on account of the length of the program of the evening.

The scientific program was at once taken up and consisted of the following:

DR. VERNE S. CABOT reported two cases as follows:

1. "A Case of Splenomegaly with Anemia Complicated by Pregnancy."

The patient was a young woman, 29 years of age, whose history prior to her 23rd year was essentially normal. She was married at 23 years of age. The same year she submitted to an appendectomy. At 24 years she had a severe facial erysipelas which left her without apparent sequelæ.

During her first pregnancy, in her 25th year, she became very weak and pale. At this time she was suffering with a right sided pyelitis, and because of this and her poor general condition she was sent to the hospital in her sixth month of gestation. Her pyelitis cleared up promptly. Early in her hospital stay she was found to have an enlarged spleen and liver, together with a marked anemia. She remained in the hospital because of her marked weakness and gastrointestinal upsets until her seventh month of gestation, when she developed a pneumonia during which she became jaundiced, causing a termination of her pregnancy at seven and one-half months.

Her hospital stay totaled 26 weeks. The jaundice persisted for two months, at which time she was discharged from the hospital at her insistence. She was told that despite the disappearance of her jaundice she was still anemic, and that there had been little if any change in her splenic and hepatic enlargements.

Her condition for the next year and a half was one of improvement. There was no recurrence of her jaundice and she was told that her anemia was improving, though she still had a large spleen with a palpable liver. At this time she became

pregnant, with a recurrence of her previous symptoms, terminating in an inevitable abortion at three months. There was no jaundice during this second pregnancy. Her convalescence was very slow, several months elapsing before she was up and about.

This young woman came under our observation at this time (1928). She was then in her 27th year. She was apparently suffering a recurrence of her previous symptoms, namely, prostrating weakness, gastrointestinal upsets, associated with loss of color. She told us that her present exacerbation of symptoms appeared three months previous, and that she attributed this recurrence to a third pregnancy likewise of three months' duration.

Examination revealed the patient to be a pale, listless individual, slightly jaundiced, and with evidence of recent weight loss. She stated that she had lost 23 pounds in the last three months. Physical examination revealed an upper left quadrant abdominal mass, probably spleen, extending downward to the level of the umbilicus and medially to the midline. The splenic notch was palpable. The liver margin was a finger's breadth below the right costal margin. There was no demonstrable ascites. There was a uterine enlargement suggestive of a three months' gestation.

Roentgen studies revealed no chest pathology. X-ray studies of the abdominal viscera visualized a large mass in the upper left quadrant. No biliary calculi were seen. Her barium motor meals were essentially normal except for displacement of viscera by the splenic mass.

Her temperature readings were practically normal at all times. Laboratory findings, in brief, were: normal urine, no bile, hemoglobin 55 per cent, r.b.c. 4,430,000, w.b.c. 4,800. Differential cell counts were essentially normal. Blood smears were apparently normal beyond a slight tendency toward vacuolization. The clotting time was four and one-quarter minutes. Fragility tests showed initial hemolysis at .44 and complete at .33. The blood Wassermann was negative.

In view of the findings, a diagnosis of splenomegaly with anemia complicated by pregnancy was rendered, and, in consideration of her previous experiences, removal of her spleen was recommended.

Laparotomy was done in June, 1928. A large spleen was found filling the left diaphragmatic

dome and extending downward to the umbilical level and medially to near the midline. The liver was only slightly enlarged, with very little evidence macroscopically of gross changes. The gall bladder was large, grayish in color and thick walled, with no palpable calculi in the biliary tract. A splenectomy and cholecystectomy were done.

Her postoperative convalescence was uneventful. She was discharged from the hospital on her fourteenth postoperative day. The pathologist reported a large spleen retaining its original shape, sections of which showed a diffuse hyperplasia with fibrosis of both pulp and corpuscles. Histologically it was a splenomegaly of the Banti type. The gall bladder showed a much thickened wall. Diagnosis: chronic cholecystitis.

As to her subsequent history, her pregnancy was uninterrupted, she going to full term, and being delivered of a viable child which, to date, is apparently normal. We have watched her progress relatively closely. She is without complaint, her weight is back to normal and she is able to do her housework. Recent laboratory studies show a normal urine, the hemoglobin averages 75 per cent, cellular counts are within normal ranges, as is the fragility test.

There is no history obtainable of similar afflictions in her family tree. (The patient was presented before the Society.)

2. "A Case of Hemolytic Icterus Complicated by Extensive Healed X-ray Burns Over the Splenic Area."

This patient was first seen by Dr. Cabot, in 1926, at which time she was 24 years of age and unmarried. Her history revealed that she had been jaundiced from birth; the jaundice varied as to degree of intensity, but at no time was she entirely free. Associated with her jaundice was extreme lassitude, at times so severe as to completely invalid her. She had been under medical supervision since birth, being treated principally for her anemia, the medication including extensive and repeated hospitalization periods at which times she received numerous blood transfusions. There was no history in her family tree of others similarly afflicted.

Early in her childhood a mass was palpable in the upper left abdominal quadrant. This mass had gradually grown in size to date. The predominant symptoms throughout had been weakness, pallor, and a persistent jaundice. At the age of 18 she first noticed a chain of gastrointestinal symptoms consisting of abdominal bloating, aversion to fat, increased constipation,

and symptoms suggestive of gallstone colic associated with dark urine and clay colored stools.

At the age of 22 years she suffered a third degree X-ray burn over the region of the spleen and the lower portion of the left breast. This was the result of improper Roentgen therapy for her apparent splenomegaly. She stated that she had received but one massive treatment, the burn showing up on the sixth day following. It was at this time that she came under Dr. Cabot's observation, seeking relief primarily from this extensive X-ray burn. She was immediately hospitalized, receiving repeated blood transfusions in addition to local treatment for the burn. Fourteen months elapsed before the burned area was completely healed. Following this the patient presented herself for relief from her abdominal discomfort and persistent jaundice. The icterus was severe enough to cause intense itching.

The physical examination was essentially normal beyond the abdominal findings, consisting of a massive healed scarred area over the upper left abdominal quadrant, and a smaller area involving the lowest pendulous portion of the left breast. There was a large intra-abdominal mass in the upper left abdominal quadrant, the upper portion of which could not be made out. At various examinations the lower pole extended to the upper border of the left iliac crest and medially to the midline. The splenic notch could not be demonstrated. The mass was apparently fixed.

Roentgen studies of her chest revealed no abnormalities. Gastrointestinal studies revealed a lamellar calculus in the gall bladder and the presence of a large mass in the splenic area. The findings from the numerous motor meals were normal beyond a displacement due to the large splenic tumor. Her hemoglobin averaged 50 per cent, ranging from 15 to 55 per cent; r.b.c. 4,000,000, w.b.c. 6,000. Differential count was normal. Blood smears showed many microcytes and some pessary forms. The clotting time was three and one-half minutes. The blood Wassermann was negative. The fragility test showed hemolysis starting at .49 and complete at .41. Urinalyses were normal except for the presence of bile, which was found at repeated examinations. Gastric analyses showed free acid within normal ranges.

The problem of surgical relief in this patient was complicated by the presence of this extensive scarring from the X-ray burn, with unknown involvement of the underlying tissues. The question arose as to the degree of fixation

resultant from the over intensive Roentgen therapy. In addition, the presence of biliary calculi, which were causing severe gastrointestinal upsets, further complicated the picture. It was the preoperative opinion of both Drs. Bell and O'Brien that the splenic condition was of greater importance and should be dealt with first, also that the apparent fixation of the mass was probably little influenced by the severe radiation. This was borne out at the operating table.

The patient submitted to surgery in November, 1927, at which time an enormous spleen was found filling the upper left abdominal quadrant, and extending downward to the upper border of the left iliac crest and medially to the midline. There were numerous relatively firm adhesions between the spleen and the left diaphragm. Whether or not these were the result of the intensive radiation is conjectural. The liver was slightly enlarged with rounded edges. The gall bladder was thick walled, containing one large calculus which had been visualized preoperatively, and numerous smaller calculi. A splenectomy and cholecystectomy were done, at the termination of which a direct blood transfusion was given.

The postoperative convalescence was uneventful. By the fifth day the jaundice had disappeared for the first time in her life. The wound healing was apparently normal. She was discharged from the hospital on the nineteenth postoperative day.

The Department of Pathology at the University reported a spleen of approximately 2,800 grams, showing very marked pulp congestion with extremely small and relatively infrequent sinuses. This is probably the most typical histologic picture in congenital hemolytic jaundice. Sections of this spleen were shown by Dr. Cecil J. Watson at a subsequent meeting of the Pathological Society, at which the histologic changes in this disease were discussed.

Three years have now elapsed since the operative procedures above described. The young lady has enjoyed apparently normal health to date. Recent laboratory studies show a bile free urine, hemoglobin of 80 to 85 per cent, and cellular studies of the blood are apparently normal. Her fragility tests are still slightly increased, hemolysis starting at .44 and being completed at .42. (The patient was presented before the Society.)

DISCUSSION

DR. E. A. REGNIER asked as to the condition of the liver in the first case.

DR. CABOT said there were not many changes, and microscopically there was very little change. The liver

was palpable. Neither of these patients had ascitic fluid.

DR. IVAR SIVERTSEN said he wished to compliment Dr. Cabot on these cases and reporting them to the Society. The question of the spleen has always been of interest, having been recognized by the ancients, even as far back as Aristotle, who had noticed that the spleen was absent congenitally; and a sect of surgeons in 1700 made quite a reputation for themselves by removing the spleen. It was in 1885 that Drs. Simon and Haeckle of Darmstadt, Germany, were especially interested in the question of the spleen and splenectomy, and at that time it was argued that there was no reason for the removal of the spleen, and the Surgical Society of Hesse decided it should be done only for injury. Collier, in 1882, compiled studies of the spleen, and concluded that the operation of splenectomy could be justified in cases of splenoptosis, cysts, and idiopathic enlargements of the spleen. Mayo and others have worked on the spleen and have found that it could be removed for splenic anemia, hemolytic jaundice, Gaucher's disease, and selected types of early pernicious anemia.

Dr. Sivertsen thought this case of Dr. Cabot was probably one of splenic anemia so that it came within the range of removal. He said the question of operative procedure had always interested him, and he noted that Dr. Cabot had used the median incision. Dr. Sivertsen believed that making a transverse incision, cutting across the left rectus muscle and going over to the right rectus muscle, greatly facilitated the removal of the spleen. He said it was very important that adhesions be clamped and tied before liberation of the spleen was attempted, after having first ligated the splenophrenic ligament. Then the question of dealing with the pedicle of the spleen was also of interest to Dr. Sivertsen. It is very friable and must not be handled roughly, for it has happened that the spleen has been torn away in this way. Dr. Sivertsen said there was one thing Dr. Cabot had not brought out and which he felt was worth while, and that was hemorrhage following splenectomy, and that one might still have a very severe hemorrhage from some of the mucous membranes of the body after such an operation, even after a few hours or as long as seven years after.

Dr. Sivertsen wished to thank Dr. Cabot again for bringing these cases before the Society.

DR. RISHMILLER asked as to where these hemorrhages might occur.

DR. SIVERTSEN said they might come from the mouth, uterus, or any of the mucous membranes.

DR. THEODORE SWEETSER remarked that it might be encouraging to recall the case of severe third degree Banti's disease with ascites reported by Dr. H. B. Sweetser, Sr., in 1920. Clinically the patient has remained well according to their latest word, even quite recently, though the blood picture has never become entirely normal. A splenectomy, even when done late, may effect a clinical cure.

DR. THOMAS J. KINSELLA reported a case of "Retrograde Intussusception of the Jejunum through a Gastroenterostomy Stoma, Observed on the Surgical Service at Glen Lake Sanatorium, in September, 1930."

The patient, a woman forty years of age, suffering from an advanced pulmonary tuberculosis, had apparently carried the condition and been totally obstructed for three days before the surgical consultation. The posterior gastro-

jejunostomy through which the intussusception occurred, had been done some five years previously for a duodenal ulcer and apparently had functioned perfectly until this complication arose. At operation the stomach was found filled with the intussuscepted jejunum which was gangrenous and irreducible. Resection was not attempted because of the patient's critical condition. Death occurred twenty-four hours later.

The complete specimen obtained at post-mortem was presented.

The case report, which included a review of the twenty-seven somewhat similar cases collected from the literature, was illustrated by a series of lantern slides showing the various types of conditions encountered.

DISCUSSION

DR. VERNE S. CABOT said he wished to compliment Dr. Kinsella upon this detailed report of so interesting a case. The essayist had called attention to the difficulties of accurate preoperative diagnosis, as those patients are usually seen late in their acute phase of the obstruction.

Dr. Cabot said he wished to report a similar case that had come under their care in 1926. The patient, a young man of 26 years of age, with a history of duodenal ulcer, had submitted to a transmesocolic gastrojejunostomy in 1922 at an Army Hospital. He was much improved following the surgery for several years, when he began again to have indigestion with upper abdominal discomfort, terminating in obstruction similar to the case just described by Dr. Kinsella.

They first saw this patient 72 hours after the onset of symptoms, at which time he was lying in the hospital in a semicomatose condition with a markedly distended abdomen. From relatives they had learned the above history. He was markedly dehydrated and was vomiting periodically, the emesis appearing fecal in character. He was given forced fluids by all avenues as well as repeated gastric lavage, and a few hours later a laparotomy was done, at which a complete obstruction of the gastrojejunal stoma was found, due to the angulation and intussusception of the distal arm of the transmesocolic gastrojejunostomy anastomosis into the stoma. The reverse peristalsis in the distal arm emptied contents into the stomach, but none could pass outward due to the trap effect of the intussusception of the jejunum through the stoma. The proximal arm of anastomosis was five inches in diameter and markedly indurated due to continued pressure and irritation. Fortunately the intussusception was reducible. An entero-anastomosis of the afferent and efferent loops was done. In addition, the efferent loop immediately adjacent to the stoma was lightly stitched to the gastric wall, to further prevent a recurrence of the intussusception.

The patient's postoperative period was very stormy for the first few days, during which he suffered a double parotitis. He was discharged from the hospital on his twenty-first postoperative day. They had watched this young man to date and at intervals had subjected him to gastrointestinal examinations, which show normal functioning of the short-circuiting mechanism. He has remained symptom free.

In the absence of Dr. A. L. Herman, who was to have read his Thesis at this meeting, an in-

formal discussion was held on gunshot wounds of the abdomen and the following cases were reported:

1. DR. R. R. CRANMER reported the case of the bandit recently shot in a restaurant holdup, who received five bullet wounds. One penetrated the scalp without entering the skull, and two passed through the left arm. There was another gunshot wound in the lower left quadrant which penetrated the small bowel three times. The bullet penetrated the mesentery of the sigmoid and lodged in the left iliac fossa. It must have penetrated the bowel on both sides at one point and then just grazed the wall at another point as there were only three holes. These three holes were all within a distance of two inches of each other. Then he had another one which entered just below the spleen on the left side and took an upward course into the left chest, evidently not hitting any blood vessels. He has not vomited blood and there has been no blood in the urine, but at operation he had quite a little blood in the peritoneal cavity. At operation three cigarette drains were inserted through the incision, also another drain through the opening where the second bullet entered the abdomen.

Dr. Cranmer stated that so far the patient had been getting along all right; in fact better than it was first thought he would.

2. DR. THEODORE SWEETSER remembered two peculiar bullet wounds. The first was in a negro who was admitted to the Minneapolis General Hospital after having been shot in the left hip. Roentgenogram showed the bullet in the pelvis to the right of the midline, but before it could be further localized he voided a large quantity of bloody urine, and with it the bullet. Operation showed that the bullet, without entering the peritoneal cavity, had torn off the lower end of the left ureter, entered the bladder just medial to the left ureteral orifice, penetrated the right wall of the bladder farther forward, and finally had fallen back into the bladder and been voided with the urine.

The second case was seen at autopsy at a base hospital in France during the war. The man had been shot in the right flank. During operation for extraction of the bullet, the bullet had disappeared. From the noises heard over the precordium, it was evident that the bullet had been dislodged into the hepatic vein and had found its way to the heart. After apparently doing well for a week or ten days, the man suffered an evident pulmonary embolism and the noises over the precordium ceased. When he was apparently recovering from his injuries, he acquired diphtheria from another patient and died from the diphtheria. At autopsy a recent pulmonary infarct was found, with the bullet plugging the corresponding fairly large branch of the pulmonary artery.

3. DR. R. F. MCGANDY reported the case of a girl who had shot herself over a love affair. The bullet, .32 calibre, entered her abdomen in the midline just below the xiphoid process, and in its course through the abdomen penetrated the left lobe of the liver, the stomach and the left kidney. The patient was transfused immediately upon her arrival at the hospital, after infusions of normal saline. She was given a general anesthetic, after which clear blood was removed from the bladder by means of a catheter. An upper left rectus incision was made. The outer third of the left lobe of the liver was practically amputated by the injury. The liver defect was repaired. The stomach, both front and back, was closed in the usual manner. A large amount

of free blood was found, not only in the abdominal cavity, but also in the lesser peritoneal cavity. Because of the patient's condition nothing was done to the kidney at this time.

The significant thing in this case was the large number of complications following this gunshot wound. The patient first developed a pneumonia which resolved in due time, leaving a pleurisy with a small amount of fluid in the left chest. On the tenth day she developed a marked adenitis on the left side of her neck, which subsided upon the application of cold packs. Shortly following this she had a severe diarrhea, having ten to twelve stools for two days. This was closely followed by a pyelitis. She was discharged from the hospital seven weeks following the operation.

The meeting adjourned.

H. O. MCPHEETERS, M.D., Secretary.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. Kenneth March, Isanti, Minn., has been named as surgeon of the Grantsburg, Wis., Hospital.

Dr. E. L. Goss, Carrington, N. D., has moved to Belcourt, N. D., and will continue in general practice.

Dr. H. R. Weirick, Hibbing, Minn., has been appointed a member of the State Board of Health to succeed Dr. E. W. Fahey, St. Paul.

Dr. A. B. Hart, who has practiced his profession for many years at Owatonna, Minn., died suddenly this month from heart trouble.

Dr. G. H. Norris a prominent physician and surgeon of Annandale, Minn., has been promoted to the rank of major in the Medical Reserves.

Dr. A. T. Monro, Kalispell, Montana, has been reappointed to a seven year term as a member of the Board of Medical Examiners of that state.

Dr. B. T. Bottolfson, Moorhead, Minn., has been elected president of the Clay-Becker Medical Society, to succeed Dr. M. C. Bergheim, Hawley.

Dr. B. H. Sprague, who has been in California during the past year has returned to Huron, S. D., where he will again have charge of the Huron Clinic.

Dr. A. P. Nachtwey, Dickinson, N. D., has gone to Europe, where he will take a six months' course in advanced surgery, at the hospital clinic at Bern, Switzerland.

Over 40,000 patients were treated at the thirteen hospitals in St. Paul during the year 1930.

It was estimated that 35 per cent of these patients came from outside of the city.

Dr. O. K. Winberg, Lake Park, Minn., one of the pioneer physicians of that section of the state died recently at his home in that city. Dr. R. V. Jolin, has taken over his practice.

At the annual meeting of the LeSueur-Nicollet, Minn., County Medical Society, held at Center, Minn., Dr. J. O. McKeon, Montgomery, was elected president for the year 1931.

The Clay-Becker, Minn., Medical society held its regular monthly meeting at Moorhead last month and were addressed by Dr. A. E. Meyerding, St. Paul, his subject being "Our Public Health Relations."

Dr. A. A. Cirkler, Minneapolis, died at his winter home in Hollywood, Calif., on December 30th. Dr. Cirkler was 65 years of age and had been a resident of this city all his life, starting practice here in 1894.

Dr. A. J. Chaney, Secretary of the Minnesota State Board of Health, has been made a member of the editorial board of the Sight-Saving Review, a publication devoted to the prevention of blindness and the conservation of vision.

Dr. D. M. Berkman, Rochester, was elected president of the Olmsted County Medical Society at the annual meeting, last month, at Rochester. Other officers are Dr. A. B. Evarts, vice president, and Dr. M. C. Piper, secretary, both of Rochester.

Dr. G. W. Launspach, Huron, S. D., who has been in active practice during the past 15 years in that city, died recently of pneumonia which developed from a bad case of erysipelas. Dr. Launspach was 56 years old and a graduate of the Medical University of Tennessee.

Dr. B. S. Bohling, who has been in active practice at Sandstone, Minn., for nearly 20 years, died at the Northwestern Hospital, Minneapolis, last month, following a recent operation. Dr. Bohling was 44 years of age and had been in poor health for several years.

The Blue Earth, Minn., Medical Society held its annual meeting this month and elected the following officers: Dr. W. C. Stillwell, president; Dr. A. F. Kemp, vice-president; Dr. J. A. Butzer, secretary and treasurer; Dr. M. I. Howard, delegate to the state medical society, and Dr. R. T. Edwards, censor.

Consolidation of the Winona and Wabasha County Medical Associations are being planned by a committee authorized at the annual meeting of the local organization. Dr. R. H. Wilson is

the new president of the Winona county group. Dr. J. D. Keyes, vice-president; Dr. I. W. Steiner, secretary, and Dr. C. H. McDonnell, treasurer.

Three prizes were offered by the International Journal of Medicine and Surgery during the recent meeting of the American Association of Railway Surgeons, at Chicago, and the Committee of Awards gave Dr. John H. Rishmiller, Minneapolis, second prize, a Wilmot Castle Sterilizer, for a paper on "Habitual Dislocation of the Shoulder."

Holding that a physician and surgeon is not an insurer of the results of his treatment of a patient, the North Dakota state supreme court has reversed a verdict obtained in district court in Minot by Gilbert Ness against Dr. T. N. Yeomans of this city. Ness had obtained judgment for \$3,200 against Dr. Yeomans, basing his suit for damages upon treatment which the defendant had given his fractured arm.

Plans for a concerted attack on cerebrospinal meningitis which is taking an increasingly heavy toll of North Dakota lives were formulated at a conference of 20 physicians recently held at Fargo. Although the work at present is being concentrated in an effort to clear up the situation at the State Training School in Mandan, Dr. A. A. Whittemore said the condition there is not particularly alarming, although it is the only state institution from which the disease has been reported.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). Speaker: Willis A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month of February will be as follows: February 4—Humidity in the Home. February 11—Control of Diphtheria. February 16—Treatment of Constipation. February 25—Cancer of the uterus.

Christmas is always a big event at the North Dakota State Hospital and this year the activities began with a Christmas party for the children of the employees. Each of the 40 youngsters got toys from the occupational therapy department of the hospital. During the evening music was furnished by the State Hospital orchestra. Christmas morning Dr. J. D. Carr, superintendent, in company with Santa Claus, visited each ward and distributed candy and nuts.

Gifts were also given each patient, these being from relatives and from the State. It is the custom of the State to furnish a present for each patient who has no relative.

CLASSIFIED ADVERTISEMENTS

For Sale

Complete equipment of Minneapolis doctor's office. All or part will be sold at an extremely low price for quick disposal. Equipment includes sectional bookcases, letter filing cabinets, swivel desk chairs, mahogany flat top and roll top desks, examining table, instruments, Baumanometers, scale, electric fans, rugs, mirrors, microscope, complete laboratory equipment, sterilizers, desk lamps, reception room table and chairs, stenographer's desks, safe, and many other items too numerous to mention. Atlantic 6458 or address box 794, care of this office.

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Resident Physician. Salary and maintenance. Good opportunity for Surgical experience. For particulars address A. G. Stasel, Superintendent Eitel Hospital, Minneapolis, Minn.

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Technician at Liberty

Capable young woman wishes position as Technician, nurse's helper or Doctor's assistant. Three and one-half years' experience in X-ray, Laboratory and Physiotherapy. Two years Clinical training. Very best references. Address 789, care of this office.

Office Position Wanted

Young lady wishes position as Doctor's assistant or office girl. Three years' experience in practical nursing. Three and one-half years' experience in Doctor's office. Good references. Address 790, care of this office.

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Unopposed practice in S. E. Minnesota, in good town of 500 population. Cash income between \$5,000 and \$6,000. A money maker from the start. Small investment. Address 787, care of this office.

For Sale

Hanovia Luxor Quartz light. Used only a few hours. Original price \$315.00, for cash \$150.00. Address 778, care of this office.

Practice For Sale

For sale in North Dakota, German community. Large territory. Excellent location. Unopposed. Address Box 792, care of this office.

For Sale

Complete set of Keystone Stereoscopic views of Edinburgh with folding stereoscope. Cost \$125.00 new. Also Wappler Excell Diathermy, perfect mahogany case and perfect mechanically, sell for \$200. Address Box 793, care of this office.

Wanted

An associate to assist in general practice and surgery. Must be able to do good refraction. No capital or equipment needed. Hospital connection in town of 2,500. Would prefer a single man not over 35 years of age. Address Box 795, care of this office.

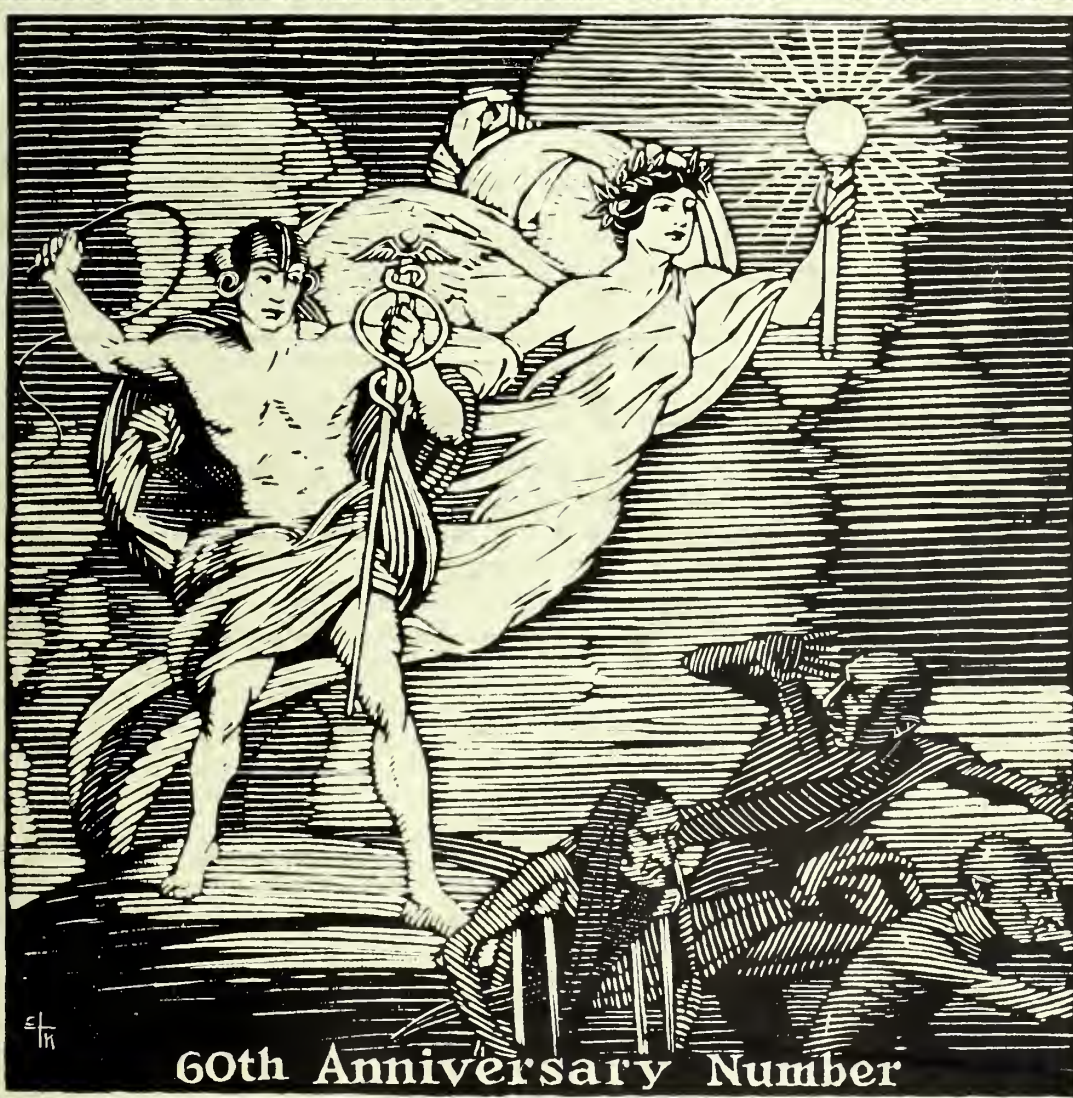
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THE FUTURE OF MEDICINE IN THE NORTHWEST

By E. L. TUOHY, M.D., and F. J. HIRSCHBOECK, M.D.

DULUTH, MINNESOTA

A world-wide depression has rendered prophets quite fameless abroad as well as at home. Social and economic developments will dictate the future of medicine as of everything else. Therefore, it may appear that we shall have more to say about methods of transportation, population concentration and general economic independence, than intimate details of doctoring, nursing or hospitalization. A modicum of philosophy and plenty of humility are useful whenever venturing to forecast the future or direct our approach to it. The service we extend is only one of many in our community. We shall have something to say regarding the keeping of our profession in touch with our time. THE JOURNAL-LANCET is wise in holding this review to these northern central states, so often erroneously designated as "the Northwest." That designation came before the Northern transcontinental railroad lines broke through to the Pacific coast. Fifty years ago this area was something like Milikan's universe, "chiefly open spaces or holes." Doctors with the utmost of adaptability, powers of observation and individuality, rode fifty miles on horseback to see their patients. Their saddlebags were both their laboratory and commissary.

The period involved is that of magnificent railroaders, "empire builders." It was an era of immigration, land grants, forest and soil exploitation, and overwhelming interest in schools. The railroads were heavily subsidized, granted rights of way, became vested monopolies; railroad workers were strongly unionized and stood sternly upon their rights. Both the builders and the workers overdid themselves. The suggestion comes to us that doctors should seek not to repeat the same mistakes.*

THE DISTRIBUTION OF PHYSICIANS

Doctors have never hesitated to become pioneers; indeed, they have been among the more

*The third great railroad, linking the north Middle West with the Pacific coast, was by all odds the one most easily financed, and is said to have had the utmost from the standpoint of technical engineering and administration; electricity eased it (most gracefully of all) over the western mountains. Nevertheless, these modern tycoons in railroad administration and finance could not see that apparently unrelated world events were making their immediate efforts fruitless.

*No one can deny that these are disappearing. The event may cause individual hardship, but their period of usefulness is gone.

colorful and intelligent among them. They have not abandoned the rural communities for the industrialized cities without good reason. The railroads dotted the entire Middle West with villages and county seats. Centers of agricultural, lumbering or mining activities came with amazing rapidity. An accurate railroad map of this general region superimposes exactly (except for through lines) on a United States Bureau Weather map, indicating maximum and minimum rainfall zones. County seats came with county divisions, based primarily upon distances accommodated to what a horse could travel going and coming in one day. Little hamlets* with post offices were placed about every six miles along the railroads to accommodate the farmers bringing in their livestock and grain. Well, Iowa this year alone has built one thousand and thirty-five miles of concreted road. The other states are moving along rapidly. The concentration of business as a whole into larger centers has had a most profound influence on banks, jobbing houses, schools, and general social relations. No one can foretell the degree to which other than railroad transportation is certain to come. We offer this only as an illustration of how necessary it is for our profession to understand the kaleidoscopic shifting so characteristic of this period and our time. It is not likely that such sharp shifting will continue indefinitely. We shall follow in a general way the so-called "civilization curve" of older countries. The people in villages about the Italian lakes (Como, for example) settled down to a fixed status centuries ago. A critically observing youth visited Bellagio in the year 1870. The explicit directions he gave to some of us in the year of our Lord 1926 sufficed beautifully to lead the party directly to the same hotel from which he had viewed the beautiful Alps fifty-six years previously. The inn was identically the same. Let someone try a similar expedient in Fargo, North Dakota, not to mention the area about St. Anthony Falls! The traveler of 1870 might direct you to sizable rivers or what remains of sawmills, but certainly not to hotels.

It is obvious that we are still living in a state of flux. The capacity for adaptation to the suc-

cessful medical and hospital needs of our component states, so wonderfully exemplified in our predecessors, we firmly believe will not be found wanting in our successors. One can scarcely read a prospectus for a great electrical organization, or the suggestions of a chemical foundation, not to mention the hopes of agronomists and socially minded folk, without joining in the utter effulgence of a claim that this region is to be indeed the promised land of the next century. In sober and philosophical moments doubts may creep in, but under those circumstances one should sustain the faith by judicious contact with our numerous Chambers of Commerce shrines.

OUR OWN MASTERS OR SERVANTS OF THE STATE

We are likely supersensitive at this time upon this matter of "state Medicine." We have intimated that general standards of living, educational attainments, and intellectual and industrial independence are the criteria which are to ultimately determine our own independence. Paternalistic government is roundly condemned; yet, we accept greater degrees of it all the time. It is an indelible mark, indicating the age any society has attained. Acceptance cheerfully of individual restriction is evidence of the degree of freedom to which we are entitled. We simply cannot treat the public unfairly without losing whatever freedom we aspire to. The present cost of medical service in our area is not exorbitant. The quality of the service is good enough to draw the admiration of the world. At a time when the whole question of national and state rights is again before us, it is fair to state that those who succeed us have an untrammelled opportunity to continue the higher type of medical service at a conservative and reasonable cost, without the intervention of any *national medical practice act*. We need not be drawn under such a blight through the economic plight of certain overconcentrated and industrialized regions, or through the greed and rapacity of shortsighted workers in our field. Throughout this discussion we ask you to keep this general statement in mind.

BALANCED EDUCATION FOR DOCTORS

We need not go back over Wiggins' classical differentiation between intelligence and education. The doctors of 1870 were just as intelligent as those of 1930; their educational opportunities were not as accurately and scientifically provided as now. The most intelligent men of the earlier period would be far better able to cope with present day problems than the least intelligent leaving our medical schools today. It is said that we

are sacrificing to see that the minimum of educational attainment is elevated, and have taken away from the opportunities of the highly gifted and specially endowed. The doctors of the early period were pitted against the greatest of all educators, crude experience and unexplored fields. Like the early settlers who braved the terrors of the prairies, they also inherited its untouched fertility. Few lazy drones became immigrants. Affluence and security are sending a lot of questionable material into our excellent medical schools, as into all schools of training. It behooves this newer, high powered crowd, to show more evidence of energy and resourcefulness and less ability to clamor for its vested rights.

The classification of medical schools into Classes A, B, and C was certainly a triumphal accomplishment. In our pride let us not fail to observe the degree to which we have surrendered control of the healing art to vested authority, the state. Our position is monopolistic in the healing field; and unlike such great natural monopolies as the American Telegraph and Telephone Company, who finance their own research and train their own personnel, research and teaching for our profession are now largely in the hands of the State or of philanthropic foundations. Furthermore, standardizing boards have been exacted, one by one, from our legislatures, each visiting upon us a renewed public responsibility. Unauthorized quacks are finding existence more and more difficult; short cuts to the right to offer to heal the public have become more and more perilous. A long way back is it to the time at which Guy founded a great hospital in London, when every seventh person was a healer. In the face of these attainments let us not forget that a very critical public views us more or less invidiously, for on the whole our social and financial position in this area is an attractive one. The proof of this is in the constantly increasing number of desirable young men clamoring to enter our good schools. The taxpayer continues to furnish the bulk of the cost of our ever mounting medical education. We humbly ask whether the graduates of the next fifty years will get the traditional molding rendering it possible for them to so recompense the communities in which they live that they may not have to be militarized.

THE KEY POSITION OF HOSPITALS

Philanthropy has long endowed great hospitals, universities, and foundations. Let us not be deceived as to the critical exactions that have come with this golden flood. Any search of the future must clearly sense this issue. For example, prac-



"MAN CHISELING HIS OWN DESTINY"

By ALBIN POLASER

From Catalogue of Exhibition of American Sculpture.

tical exigencies of teaching and research in medicine have drawn those so engaged directly into the treatment and *hospitalization* of sick patients. In fact, any medical teaching (whether intra- or extramural) now calls for a large number of hospital beds to furnish the material for the observance of disease in its various phases. So dynamic and fourth dimensional has our work become! This is in striking contrast to other professional teaching, notably law, and to a lesser degree that of the teaching of engineering and architecture. The teaching and actual public practice of these vocations are entirely separated. This tendency of medical teaching and research to encroach on private practice may be wisely limited, but it cannot be dispensed with. We venture to predict that it will increase. Specialism is a sore point with the public, but a very great boon

to medical science. The problems of teaching and research have together created the specialist. These adjustments (still in the making) will most certainly continue. No doubt a considerable segment of our profession, with those developing the allied sciences, will continue in the pursuit of whole time teaching and hospital administration. There will arise here and there a lone wolf of genius who like Banting or Beaumont, may isolatedly produce high grade research; but for the most part our universities and foundations, with elaborate technical equipment, will furnish the library, the atmosphere, and the critical stimulus to men who elect to spend their energies in research. *The present wise policy of the National Association for Tuberculosis to distribute its problems to already developed institutions here and there, rather than needlessly to multiply new ones, likely fosters a wise future policy which our district will follow. We shall need no additional medical schools for the period under discussion. Our hospitals, private and public, must come into closer and closer association with our research and teaching centers. The fifth, or intern school year, with an increasing number of fellowships for those seeking to enter specialties, is at least showing the way. Extramural medical educational activities will be very greatly extended and amplified. The realization has come (rather suddenly, we may say) that undergraduate medical curricula furnish the introduction to our profession. This accounts for our multitude of medical societies and our seemingly endless "graduate enterprises." The law confines its conclaves to court rooms and a perusal of the court decisions. Let us pursue these comparisons no further, they might become invidious or worse!

PUBLIC HEALTH AND INSTITUTIONAL EFFORTS

We need only look at our tuberculosis sanatoria or institutions for the insane and defective, to note the very large segment of practice which has been withdrawn from so-called private management. The rapid disappearance of contagious disease, as well as many transmissible infections, points unerringly to the effectiveness of public health measures.

The newer practitioner coming into our field may well do something better than bewail these defections. Future therapeutic agents may re-enlist private practitioners in the treatment of many chronic conditions now sloughed off, and either left to the quacks or to municipal and state hospitals. Private physicians will always continue to be the agents for administering most of the health measures devised by our whole time state and municipal authorities. The instinctive

*Some unjust attitudes exist toward research teachers. Industry is more tolerant toward them than is the general profession of medicine. Certain minds fight against universal interests and ask a field for concentration of peculiarly narrow confines. Such men devise carburetors but rarely build cars. As the matter applies to medicine read Rufus Cole's excellent discussion in the volume of Science 1930.

purpose inherent in every honest physician to limit human misery, disease and discomfort, will continue to have its reward in the form of an antidote to our much heralded commercialism. Preventable illness pauperizes; sustained health yields the individual's independence. This, in turn, is the only agency which can assure like independence to us. An increasing number of good men should go into the public health field; they will continue their own societies, and let no one suppose that their good search for the truth, wherever it may lie, will be any the less "research" simply because it has not been divulged via ultramechanical methods.

We have noted that the character of medical administration has responded very acutely to a change from frontier farming and lumbering to a combination of dairying, mining, farming and jobbing. What will be the response to a decisive swing toward manufacturing? Our leading bankers seem to think it is coming; therefore, they are merging and attempting to direct our larger financing within our own areas. Some, witnessing the enormous trend toward huge industrial centers and mass production (evidenced as clearly in Detroit as anywhere else), may state that the larger centers will become still larger, abolishing the need, if not the opportunity, for industrialization with us. There are, however, strong arguments to show that this gross centralization carries with it sufficient inimical by-products to limit itself. Chief among these factors is that of unemployment incidental to the outrunning of production beyond demand. Cities become attuned to prosperous periods of expansion, and if retrenchment comes (even temporary in nature) then bread lines,* loss of homes, doles, and inevitably (if this should go on) we would have to expect some form of "panel medical practice." Cities founded upon such mushroom growth invite political chaos and racketeering. Taxation incidental to the immense expenditures and borrowing of their expansion period inclines to devour them. Hence, those well informed foretell that a movement back to the smaller communities will occur. Moderate sized industries may then hope for operation most of the time.

No possible system of insurance against old age or illness can be built up unless people work most

of the time. No chimera of "twenty-seven-dollar-a-day" wage, with dictation as to the number of days one shall work, can ever satisfy the kind of people we know. Increasing wages to supply demands, which in turn will use up all the output, whatever it may be, sounds altogether too much like the "cat and rat farm" idea. We are again bold enough to predict that industry will employ its own medical measures to protect itself against accident and disease for which it is responsible. It will likely abandon the pioneer methods of caring for the families of its employees. Guilds and insurance societies may be tried, but they will be no better than their management. If entered upon on a large scale their failure will be the immediate urge for assumption by the State. Intelligent action and behavior on the part of our profession may well become effective in making unnecessary such developments. The great State of Wisconsin has already gone far in this method of balanced industrialization. Wisconsin has many fine, moderate sized cities, people living in wholesome, individual homes; fair sized factories, surrounded by agricultural communities. Henry Ford may be right in assuming that sometime factory employees may spread their labor to the farms, seasonally or otherwise, dependent upon the need and the demand. Wisconsin is likewise attempting to grapple with the tremendous problem of education, its objectives, purposes, methods and universality. We wisely attempt no predictions in this field.

The age old attempt of man to adjust himself peacefully to his displacement by machines, furnished a problem that other districts will find more difficult than ours. We seem ready for adaptation with a people so far quite unexploited from the standpoint of irrational speculative living and improvident urbanization. This great section was crowded according to their standards and way of living when the Indians lived here. Granted a possible moratorium in birth control, or further encouragement of selective immigration, and we may well find useful ways and means to employ most of our people, and at the same time accept all the labor saving devices proffered by science. Wise prophets hint that the real difficulty shall come not in an equitable distribution of labor, but of leisure. Doctors have never clamored for shorter hours of labor, but have yearned for more orderly periods of leisure. The concentration of office and hospital practice is making possible a considerable withdrawal of good agricultural land to provide golf courses! Two active doctors in 1935 will be able to do the work of five men as they were forced to work in

*A recent traveler from one of these cities reports four lines abreast of men, four blocks long, at the employment gate of a large plant. Across the street a line nearly as long was storming a movie entrance! A social worker reports a high percentage in the lower mentality groups in these floating unemployed. They "crack up" and are forced out before their more adequate competitors. Legion service agencies plead for increased hospital space for a similar group, who happened to have been drafted but not necessarily engaged in actual warfare, stating that the "peak of mental disability" for the few million drafted will not come until about 1945. How about the perpetually increasing legions of industrially drafted?

1885. Think of this in terms of the number of doctors per capita and their distribution.

While we may encourage these "mass production" efforts of our own, we must not forget that the weaknesses inherent in such plans create a wider and wider spread between the lower and higher incomes of physicians as a whole. This develops within our own ranks an attitude which will be less and less critical of various governmental invasions of our field, such as are already exemplified in our liability insurance and the European panel system. The time may well come when a certain amount of leisure should be forced upon some of us, even as the socially minded economists propose to visit it upon labor in general. Then we may be in a position to consider the oriental advice, "Civilization is what you do to environment; culture is what you do with it."

GROUP PRACTICE AND HOSPITAL STAFF ORGANIZATION

The States concerned in this discussion have been quite prolific in producing new political adventures; it would be strange if they did not likewise foster new medical movements. Group clinics have come within these very States to their highest development. This subject in itself is broad enough for several discussions; little space can be given to it here. Some of us who have been most occupied in the movement are perhaps best qualified to know its advantages and limitations. The method certainly can under wise administration be made to effect economies and greatly reduce the cost of needful elaborate diagnostic and therapeutic measures. It is particularly adapted to areas of moderate population concentration, well situated in terms of surfaced roads. It must grow synchronously with balanced hospital development. Indeed, in many instances effective staff organization of the safer types of specialists and general practitioners will suffice quite as well as more formally merged groups, and may avoid the truly great difficulties encountered in closely uniting the divergent personalities, naturally fostered by a profession as independent and sensitive of personal prerogatives as ours. Iowa's road campaign, now being followed by Minnesota and the Dakotas, cannot help but produce a fair number of healthy hospital centers, where good medicine and surgery can be easily developed. Wisconsin now has them,

and the Western States have made a fine beginning. The mistake must not be made of planting these hospitals indiscriminately, without orientation in terms of nursing and intern education, proper administration, self perpetuating staff organizations, undominated either by lay people insufficiently medically minded or by doctors totally and absolutely unsocially minded. These hospitals must aim to be self supporting, but the cost must be kept within conservative limits or better managers will take them out of our hands. Julius Rosenwald has recently been quoted (despite his well known philanthropies to small rural institutions) as stating that business sense and financial independence must be fostered and made possible in private hospitals, rather than to urge and invite vicarious and vacillating external charitable support.

KEEPING THE PUBLIC ON OUR SIDE

It is seen as we gradually pursue this line of thought, that a sweep from early pioneer individuality to a growing solidarity of society inevitably submerges the individual into the mass or group. This is indeed civilization's greatest exaction. Accordingly, two movements are gaining ground. The one has to do with widespread educational propaganda,* intended to familiarize the so-called "public" with the advantages of scientific medicine, hospitalization, and general disease prevention measures. This movement began largely from within our own profession. The other, closely related movement, bears upon the general field of advertising, so long the chief agency yielding existence to quacks, and so abhorrent to the "anointed." We can only foresee the wildest chaos should the methods of commercial advertising be adopted by doctors and hospital staffs. We might intimate that the wildest chaos already exists in commercial advertising, a great deal of it as applied particularly to smaller business is coercive, crushingly burdensome and often totally ineffective.** If we ever entered into it we would be exploited and gloriously plucked, yielding nothing particular of advantage to sick people casting about for relief, but certainly offering a Roman holiday to go-getter business departments of newspapers and magazines. It is doubtful whether cautious, restrained, subtle or "inspired" publicity in the press has ever accomplished ultimate good or advantage for groups or hospitals anywhere. Supremacy or success fostered in that manner imposes its own limitations, unless the method is followed up extravagantly; and that soon becomes injudicious, meddlesome and professionally offensive. When this stage comes,

*Much of this legislative and general public appeal by our State societies is ill advised. It presupposes that we are misunderstood. We are really better off than most professional groups.

**Publishers are merciless in pitting rivals against each other. A "sale" by one store is the signal for violent outbidding by others. Judicious facts are forgotten in a flood of sales talk.

publicity returns to plague, and the last stage is infinitely worse than the first.

Those who contemplate group and hospital organization for the future that expects to survive, will learn well the lesson that no group or hospital may ever usurp professional proclivities denied the individual; hospitals must be built with the very greatest foresight, determined by the local needs, and with accurate judgment as to the regional growth. Some may hold that this sort of aloofness is not compatible with modern trends; that medicine must popularize itself with a good deal of noise and acclaim. Well, the Esclepidiae were hidden; therefore, they were sought out. Triumphant aviators and movie artists survive only by refusing to surrender their souls to "their dear public." The churches have not gained by attempts at popularization of religion. To be ill and need medical and hospital service (at a time when dizzy living and installment buying offer such alluring inducements to the improvident) prepares the way for much of the carping criticism of doctors' charges and hospital costs now appearing in popular magazines.

Some wise districts will undoubtedly work out standard charges, including the doctor's fee, hospital and nursing charges. There has been so much criticism of the penalties imposed on those who assume the burden of having and rearing children, that society ought to establish some form of subsidy for them, direct or indirect. There is much argument to bring forward that such a far-sighted policy would be of great benefit ultimately to the profession of medicine itself. As a beginning, standard fees, including everything for obstetrical cases, tonsillectomies in children, may be the starting point from which, through the possible help of well advised insurance, certain costs may be the better spread, without ruining either the obstetrician or the tonsillectomist. Let us recall that safety razors are usually given away with the subtle understanding that the upkeep of blades will establish the industry!

We have now a plea, arising from the care of impoverished "crash" victims of auto injuries, not only for compulsory liability insurance but also cost coverages for car accidents, whether the result of negligence or not. Apropos of hospital rates, hotels have been in a position to exact as much tribute as possible when strategically placed,

and adapted to cater to those desiring unusual service. Nevertheless, throughout the land there are to be found entirely fair and satisfactory hotel accommodations, with rates against which no fair traveler should complain. To accomplish this service the very best in hotel architecture and management has coöperated. Errors in construction and wasteful methods have been gradually eliminated. We feel safe in predicting that similar coöperation of needful groups will in the next fifty years insure to this great midwest empire satisfactory, independent, effective, and economical methods of treating and preventing disease. No one can even hope to prophesy the approximate nature of these activities. Certain it is that every possible discovery of any nature whatever that is made to yield a closer understanding of nature's* secrets, will be promptly drafted for the never ending war of civilized man against his ills and age infirmities. Our medical pioneers were men of vision. No better medical schools nor foundations have ever been established anywhere. Their building came directly from the soil; it arose out of a mass population trek largely from the New England States and Northern Europe. Practically speaking, this trek is over. The unexploited natural resources are now in the great Southwest. The last census shows the shove of population toward the lure of gas and oil. We do not wish to appear boastful, but we hold it fortunate that we cannot build on the banks of the Mississippi or Missouri the sort of medical outrage that has quite recently graced the east bank of the Hudson.

We stated in the beginning that medicine will always keep in step with general economic developments. Where man aspires to rise to heaven by storied monuments of steel and concrete, there the field of medicine will have for most of those in it, that fiery freedom of movement and purpose so conspicuously shown by ants in their ant hill creations. We have out here "atmosphere and freedom," a bestowal of nature, an effective curb of artificiality. Let us know our people and love them, seeking no vested responsibility over their morals or an economic one over their material accumulations. Somehow the past is always pictured so much less glorious than the future is to become. Why should this be so? Lord Byron, on visiting Rome is said to have written, "I have seen a pope dead and a cardinal alive; both looked very well indeed."

*"Nature is at once a *science* which never leaves off deducing effects from causes, and an *art* which without end exercises itself in new inventions." Lachelier: from Science LXXI, 1847, p. 525, May 23, 1930.

THE DEVELOPMENT OF PREVENTIVE MEDICINE IN THE NORTHWEST

BY D. C. LOCHEAD, M.D., C.M., D.P.H.
Deputy to Dr. C. H. Mayo, Health Officer
ROCHESTER, MINNESOTA

Preventive medicine is a term which includes the use of all knowledge and all practice tending to preserve health or prevent disease.

Many have the thought that it is a recent development and some see in it a menace to the profession and a danger to the public. In reality the beginnings of preventive medicine go back to earliest days, and may even antedate those of remedial or curative medicine, because the very earliest records concerning health and disease emphasize the necessity of discovering and removing or neutralizing causes. Its practise properly directed can only enhance the services of the profession and be of unmeasurable benefit to the public.

In the course of time, increasing knowledge demonstrated that man himself was sometimes the greatest menace to his fellow man, and that centralized community action could sometimes more economically and more effectively operate to prevent disease. So rulers issued commands and orders or passed laws and ordinances providing for restrictions of the actions or movements of individuals and these were carried out or enforced by more or less competent, elected or appointed officials.

Much good was accomplished, and official health departments are today the chief force in the fight to maintain health and eradicate disease; but they are now operating more as leaders and teachers, they are ceasing to be policemen and becoming educators.

Half a century ago, concerned individuals began to recognize that there were limits to the power that could be given to officials, depending in the first instance on the knowledge and intelligence of the governed and in the next on the financial appropriations for the employment of personnel and equipment. So there soon came into being unofficial health agencies, which when properly directed and controlled have been of great assistance to the official health departments, the profession and the public.

About two or three decades ago physicians began to realize that the individual practice of preventive medicine was a proper function of the profession, and there are many today who realize

that the physician individually and collectively should be the chief force in the fight to maintain health and eradicate disease.

In the recognition and the use of these three forces of preventive medicine the northwestern States have always been among the most progressive. In fact the Minnesota State Legislature, by request of the State Medical Society, was the third in the Union to establish a State Health Organization, away back in 1872; and already as long ago as 1854, under a Territorial law incorporating the town, the Town Council of St. Paul was authorized to establish a Board of Health and to provide by ordinance for the control of contagious diseases. Thus the first Board of Health was established in Minnesota. Soon after, in 1866, the Township Board of Supervisors was made the Board of Health for the township, and the law required the employment of a physician as Township Health Officer.

This may not seem very long ago as far as years go, but compared with the development of preventive medicine it was very early days. It was before the general reporting of communicable diseases, before the days of sanatoria, long before the pasteurization of milk and the general purification of water and the use of diphtheria antitoxine. In fact about all that preventive medicine meant then was vaccination, some measure of sewage disposal, and the banishment of smells by the substitution of other smells.

Dr. Charles N. Hewitt, of Red Wing, was the first Secretary and Executive Officer of the State Board of Health, and in the 58 years which have elapsed he has had only three successors, Dr. H. M. Bracken, Dr. C. E. Smith, Jr., and Dr. A. J. Chesley, the present Secretary.

Volumes could be written about the activities and accomplishments of this Board, such as the establishment of a statewide basis for coördinated action in the control of epidemics, in preventing pollution of waters, in the use and study of vital statistics, and in diffusing among the people information regarding health.

In 1890, there was established a smallpox vaccine laboratory near Red Wing, and in 1907 a

Pasteur Institute to provide the preventive treatment for rabies free to Minnesota residents.

Minnesota was one of the first states to apply culture diagnosis as a means of diphtheria control, in 1894, just a year after it was first used as such in this country; and in 1899, Dr. F. F. Westbrook, Dr. L. B. Wilson, and Dr. O. McDaniel worked out and described a classification of diphtheria bacilli, which was at once recognized to be of great practical value and was adopted by public health authorities both in this country and in Europe, for recording types of *B. diphtheriae* in routine microscopic examinations of nose and throat cultures.

Quite early the distribution of free antitoxine to cure and prevent diphtheria was commenced, and it is now carried on through 375 distributing stations.

Minnesota was one of the first states (in 1921) to act in coöperation with the Federal Children's Bureau, in carrying out the provisions of the Sheppard-Towner Act to reduce the excessive death rate among mothers and children in this country.

The department's work in connection with milk sanitation, pure water, sewage disposal, and typhoid control has always been excellent and only limited by financial appropriations.

The sister State Wisconsin was the eighth

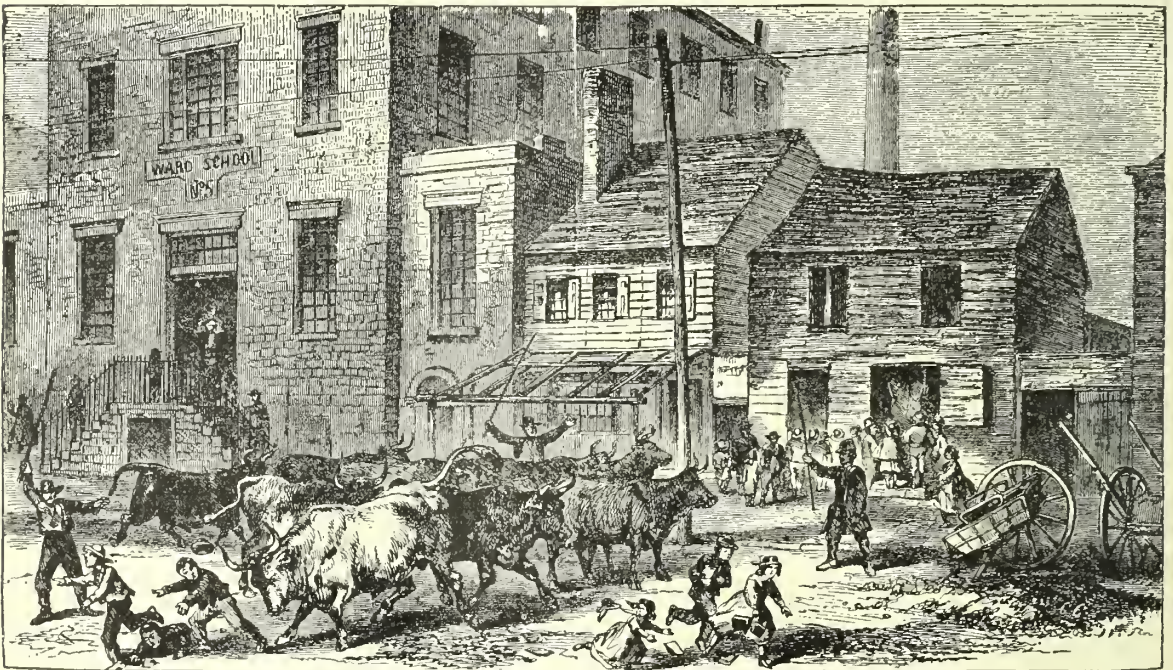
State to organize a State Board of Health, in 1876, and has consistently since carried out a broad and comprehensive list of activities, conferring the maximum of good upon the public with a minimum of friction either with the public or the profession.

North Dakota, on its organization as a State in 1889, had provision for a State Health Organization, and one of its cities, Fargo, was chosen as a representative city of the Mississippi Valley, in 1922, for the establishment of the first Commonwealth Fund Child Health Demonstration, an evidence of the progressive spirit of Northwestern physicians and public health sentiment.

Montana, while not so early in the organization of its State Health Department, has, considering its appropriations, one of the best balanced and most successful State Health Departments in the country. The work of the Board of Entomology in connection with Rocky Mountain spotted fever and other tick borne diseases being especially praiseworthy. It has been doing investigation and control work in such diseases since 1902, spending nearly \$300,000. It has recently constructed a first class up-to-date laboratory costing \$60,000 at Hamilton, Montana.

The work that this Board is doing in developing a parasite for the wood tick, *Dermacentor andersoni*, is a piece of work that is not dupli-

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SCHOOL AND SLAUGHTER-HOUSE: A CITY HEALTH HAZARD OF SIXTY YEARS AGO

From the Report of 1865 of the Council of Hygiene and Public Health of the Citizens Association of New York upon the Sanitary Condition of the City.

SEDGWICK AND BREAST FEEDING

By L. F. RICHDORF, M.D., Ph.D.

MINNEAPOLIS, MINNESOTA

Whenever interest is stimulated in the "natural feeding of infants as contrasted to artificial feeding," the city towards which all eyes are turned is Minneapolis, Minneapolis made famous by Sedgwick¹, because by a certain definite plan more women were able to breast feed their babies here than in any other city of America, possibly of the world. At the same time the infant mortality dropped precipitously, indicative of possible relationship between the increased incidence of breast feeding and the decreased infant mortality.²

From 1910 on Dr. Julius Parker Sedgwick took every opportunity to emphasize the importance of maternal nursing in infant feeding. Though his training in Heubner's laboratory and his continued interest in physiological chemistry^{3 4 5 6 7} opened many fields of promise in research, he considered his greatest contribution to be the education of the profession and laity as to the importance of breast feeding.

In 1910-11 statistics were compiled from questionnaires sent to the members of the medical profession. It was not enough to know that physicians advised their patients to breast feed, but what did they do in their own families? Dr. Sedgwick's contention was that the family of the laity could at least do as well as the family of the doctor. Information was also requested as to whether these mothers felt obligated to nurse their children, and if they had difficulty in accomplishing this task what did they do? What reasons did they give for "bottle feeding" their babies? Though he had many men of wide experience confirming the opinion that agalactia was never found in a mother, with the mammary glands present, this question was also considered.

In 1912⁸, he published the findings as tabulated from questionnaires sent to physicians in Minnesota, Wisconsin, and the Pediatric Section of the American Medical Association. In Minnesota he had 469 mothers, wives of physicians, of whom approximately 82 per cent nursed three months or longer and 63 per cent nine months or longer; only 2 of the 469 mothers, or 0.4 per cent intentionally did not nurse. In Wisconsin 76 per cent of the mothers nursed nine months or more and in the 94 mothers wives of doctors in the Pediatric Section of the American Medical Association 78

per cent breast fed three months or longer. His conclusion from the above was that in physicians' families about 80 per cent of the babies were breast fed three months or longer. As to agalactia, a certain proportion of failures were ascribed to insufficient milk, but none to absence of secretion. The quotation⁸, taken by Sedgwick from Jacobi's presidential address before the American Medical Association in 1912, bears repetition: "The attentive doctor and the diligent midwife know that our women, poor and rich, suffer from no organic mammary degeneration."

In the above survey the actual procedure in the homes of physicians was shown, reflecting the unanimous verdict of the profession as to the efficacy of breast feeding. The mortality in artificially fed infants in the first year was estimated by Sedgwick to be four to six times as great as in babies fed with human milk. But he felt that a far greater proportion of babies should and could receive breast milk than the above noted 80 per cent.

This necessitated teaching, agitation, arousing of interest, the doing of countless details as to the research of this problem. Prenatal care was urged, not only to insure a mother's life but to insure the mother's ability to nurse the baby once it was born. And because so often at and after delivery the accoucheur's attention may be directed more to the mother, he urged the coöperative care of the newborn by another person. Thus, in 1913, the newborn ward at the University of Minnesota was put in charge of the Pediatric Department at the earnest solicitation of Dr. Sedgwick. To the present date, the two departments of Obstetrics under J. C. Litzenberg^{9 10} and Pediatrics have worked in harmony, and the feeling has been mutual in both departments that the arrangement has been advantageous to the best interests of the patient, of research, and of the teaching of medical students and nurses.

When difficulties were encountered in the newborn's nursing, both the mother and the baby were considered. Was the mother willing to nurse? And, as was shown before ninety-nine and a fraction per cent were willing. Was the mother's condition good? If not, could it be remedied so she could nurse at least in part? Were there such

definite contraindications to nursing as serious diseases transmissible to the infant by contact and through the milk? Infectious diseases of the mother were not acquired as often as was expected by the baby. And if objection to nursing was raised the "old stripping" of the breasts, now known as manual expression, was brought forward. The breast milk could then be boiled and given to the infant. If the illness was not too long or severe the mother convalesced, the milk supply increased, the baby was put back to breast, and both baby and mother did well.

From the teaching side—it soon became obvious that medical students were being graduated "who had never seen a baby nurse at the breast." In many schools the bulk of the teaching time was spent in the discussion of feeding with cow's milk. Dr. Sedgwick placed on a placard in the Pediatrics lecture room, a quotation from Oliver Wendell Holmes, which was in substance, that the mammary glands, because they furnished a nutritious infant food, were of more value than the cerebral hemispheres of the most learned professor. In lectures the great teacher would stop again and again to emphasize the nursing of the infant, and then in a humorous way would say, "When you think of breast feeding think of Sedgwick, but when you think of Sedgwick think of breast feeding."

From about 1915 or 1916 fellowships were encouraged and students from various parts of the United States came to Minnesota. Everyone became a convert to the ideas of Sedgwick, who expected every healthy mother to nurse her baby gladly and willingly, who emphasized like Jacobi the doing of practical things for the child and the mother, and who most thoroughly appreciated children himself. Contemporary medical men interested in Pediatrics were quick to see the importance of this work. Various other cities in conjunction with University or other Pediatric teachers put on breast feeding campaigns or did research work in this field. A few cities^{11 12} outstripped Minneapolis in the establishment of breast milk dairies, enabling babies whose mothers were incapacitated to have breast milk. Really what this accomplished was to replace "wet nursing" by "manual expression."^{13 14 15} Poor nursing babies, weak babies, premature or sick babies, had the breast emptied for them and were fed the milk until able to nurse. The mother with much breast milk might feed successfully several children besides her own infant. However the purpose of manual expression was not only to furnish human milk to those babies whose mothers were incapacitated. The emphasis from the normal mother's

standpoint was that emptying the breast stimulated secretion.

Men all over the U. S. began to devote time and attention to the study of the normal infant. Data was collected regarding the amounts of milk nursed, the length of time^{16 17} of each nursing, the number of feedings in twenty-four hours, the vitamin content of breast milk, the proper time to start solid food, the enzyme content of the saliva and gastric juice at various ages, the gastric acidity of apparently normal infants, the amount of acid needed to change the Ph of breast milk as compared to cow's milk, the occurrence of gastrointestinal disease, nutritional disturbances, rickets, spasmophilia, respiratory disease in the breast fed and the bottle fed. These were some of the basic problems subjected to scrutiny because of the interest stimulated by Sedgwick in breast feeding. Necessarily many contributions were from contemporary pediatricians all over the United States. But Sedgwick added and collaborated continually. The skeptics of his work were those who had little contact or knowledge as to his accomplishments, or worse, those who practiced Pediatrics as a field of minor importance, without taking time to investigate this problem and re-educate the mother or the lay public to its importance.

With Dr. Sedgwick as with all aggressive men when their work is attacked, the desire to prove his ideas by a tangible demonstration became a paramount issue in his life. In a coöperative plan the medical profession, the private practitioners, the Public Health Department, and the nursing profession were to aid the University Pediatric Department in putting on a breast feeding demonstration. The births were to be reported by the Health Department. Each mother was to receive literature stressing the importance of breast feeding. A nurse called at the home (with the permission of the doctor in charge), reiterated the facts contained in the first communication, and if necessary, demonstrated breast expression. Each month another letter was sent and as many calls made by nurses as was possible with the small stipend from the University and the donations given by private individuals to Dr. Sedgwick for this purpose. Nurses were given particular instruction as to their part in this campaign. Of course, the nurses of the University Hospital profited most, because they not only were taught the necessity of breast feeding and the advisability of manual expression, but they did breast expression as a part of their training. These nurses not only did great service as teachers and demonstrators to the laity, but on marriage taught by example by nursing their own children. Only re-

cently one of the pediatric nurses reflected the opinion of the group, when she said that she felt ashamed that she nursed her second baby only three months. That's the spirit inspired by the work being presented.

The Infant Welfare Society with its very excellent leadership carried forward the work after the University Breast Feeding Bureau became lost to view.¹⁸

Let us now note the results of Dr. Sedgwick's work on the percentage breast feeding in Minneapolis. Five years after the work was started Dr. Huenckens^{19 20} compared the Minneapolis figures for breast feeding with those of eight other cities in the United States.

Number of Breast Fed Infants Month of Life	Minneapolis	Eight other Cities
First	97.9	89.8
Third	93.6	79.6
Fifth	89.8	72.8
Seventh	83.4	68.5
Ninth	78.7	64.9

From the above it is seen that almost 80 per cent of all infants were nursed to the ninth month instead of only to the third month. About 94 per cent were nursed to the third month.

Woodbury²¹, in 1922, analyzed again the mortality figures for breast and bottle fed infants, showing the mortality to be lowest in breast fed, higher in partly breast and partly bottle fed, but highest in exclusively bottle fed. The mortality was three to four times as great in exclusively artificially fed as in exclusively breast fed.

Now as to the methods by which to increase the number of breast fed babies. Dr. Sedgwick, in a teaching position, began with the medical and the nursing students at the University of Minnesota. Then the profession at large was enlisted, and the laity, the Public Health Department and the profession coöperated in the breast feeding demonstration. The practitioner of medicine, in order to succeed, does not need to reach as many classes of people, but he must make it more fashionable to breast feed in his community if he is to get the full coöperation of the mothers. He must enlist the services of the social leaders to the extent that they nurse their own babies rather than to practice infant welfare outside the home while their own children are bottle fed. The individual practitioner must supervise during the newborn period, making it as easy for the mother as possible. There must be some system to every project and so it is with nursing. A schedule of nursing should be given the mother, she cannot nurse all the time, or irregularly or every hour, particularly if she has other children.

Regularity is essential though it can be modified to meet individual cases. Sedgwick had more Minneapolis women nurse their babies for nine months than in any other city and he was an enthusiastic follower of the schedule of nursing every four hours five times in twenty-four hours, 6 a. m., 10 a. m., 2 p. m., 10 p. m., 6 p. m. usually alternating breasts, and nursing about twenty minutes each time. Before anyone condemns long interval feeding by Sedgwick, let him demonstrate his ability to do as well on some other schedule. There is no doubt that among the students of this great teacher there is less rigidity, and the three hour schedule is often advised: 6 a. m., 9 a. m., 12 m., 3 p. m., 6 p. m., 9 or 10 p. m. The eight hours' rest at night and training of the normal baby to sleep at night by not giving water or milk, has certainly been emphasized but constantly needs reiteration. The physician who orders a mother to nurse night and day every two or three hours, certainly has not considered seriously the mother's physical rest, even if he forgets nursing is work for the infant. Nor must the mental side be forgotten. Nursing may be difficult with the strains and stresses of domestic life, quarrels, illnesses, deaths, financial difficulties. The mother must regard her duty to her child as paramount, particularly in the early months. On the other hand she should be given proper rest and allowed to devote her time to her baby.

And now as to breast expression. This is not a simple procedure without danger. Injury to the mother's breasts with inflammation or abscess may result in failure just the same as the lack of emptying the breast. It is not necessary for every woman to express. However, if she were taught expression early she could do it later when for any reason the baby could not or should not nurse; or she might be able to perform the act of supreme charity of furnishing milk for the motherless infant.

Breast expression should be done with certain characteristics, cleanly, regularly, gently, comfortably, and above all cheerfully. Cleanliness of breasts and hands regularly after each nursing, gently so as not to irritate or abrade the breast; in a comfortable chair and position and for a period not too long; and cheerfully, not to think about amount expressed with too much anxiety, or to worry about ability to nurse, grandma, the bills, etc. Relaxation in breast expression means a great deal because with rigidity, crying, and anxiety the process is done too forcefully, too hurriedly. Those physicians who expect the mother to express all a baby needs after a single talk with no demonstration are doomed to disap-

pointment. Trained workers able to demonstrate breast expression properly with mothers under observation were the keynote of the success of the Minneapolis project. Mothers who expressed entirely for two, six or even nine months and saved prematures, or in case of harelip and cleft palate had babies not anemic and underweight but above weight and of good color, show what can be done. Mothers who had discontinued nursing for two, three, four, even eight weeks have been able to re-establish function by nursing a short time regularly every four hours, then expressing, as above outlined, provided they decreased gradually the artificial food being fed, and gradually increased the nursing period.

Were Sedgwick to see the breast pumps today he would undoubtedly question their efficacy. There is the cost, the mechanical application, the inaccessibility, the difficulty of cleansing, all of which are not objections in case of hand expression. Also remember that the use of none of these machines or appliances has in itself (the child being unable to nurse) lead to continued prolonged nursing, but just the opposite.

As to the implication that the mothers of today are different or weaker than in bygone days, Dr. Sedgwick knew the psychology of breast feeding required encouragement of the mother. The telling of a mother in so important a biological function that she is a weakling must have a most profound mental effect on the whole attitude of the mother towards herself. The wholesale inclusion of all modern women in this accusation of inferiority of breast function is unwarranted. The suggestion of the above by routine complementary feeding in the newborn period or by the giving of a formula on leaving the hospital with the advice "Don't use this mixture unless the baby needs it," is not duly appreciated. If it is done with full consideration of its effect on the mother and baby, it is reprehensible. Anyone with the least knowledge of the unstable mental condition of the mother after delivery, her anxiety, her readiness to accept advice from anyone and everyone, should hesitate to fill the mother with doubts and misgivings. If the doctor has these misgivings let him observe the mother and infant more frequently. Whether the mother thinks it necessary to see the doctor depends in part on the conviction of the doctor. There is little reason to doubt that the first month after birth, particularly with the first baby, is most important to be supervised. Inasmuch as the leaders in obstetrics have taught for years, the observation of the mother's general health, it should be most proper to consider both mother and infant during this time. What has been done

in clinics and free dispensaries indicates that the mothers in meager circumstances, with larger families and more work, but seen regularly, breast feed with more success than mothers of well to do families who do not see their doctor, or in some instances, when they do see him, he suggests procedures leading to the weaning of the baby. It is not the province of this paper to discuss the reasons why the medical profession, besieged and bewildered daily by a multitude of letters from a hundred milk companies, are led into artificial feeding of infants. It is rather to remind us of what can be done by breast feeding, and how Sedgwick accomplished what was thought impossible.

May we conclude by summarizing from a pamphlet²² widely distributed in Minneapolis, a pamphlet written by Dr. Sedgwick and approved by Dr. Fritz Talbot and Dr. Richard Smith, Advisory Committee on Maternal and Infant Hygiene.

A. Causes of failure in maternal nursing.

1. Insufficient milk: a. Failure to empty breast, poor nipples, poor nurser (do breast expression). b. Fatigue. c. Irregular nursing. d. Poor diet. e. State of mind of nursing mother.

2. Poor milk: (Slow gain usually due to insufficient quantity not to poor quality. Chemical analyses showing poor milk are often done on a part sample of total milk excreted at one nursing.)

B. Essentials for satisfactory breast feeding.

1. Conviction on part of physician.
2. Conviction on part of mother that she can nurse her baby.
3. Stimulation of breasts at regular intervals.
4. Complete emptying of the breast, if necessary by manual expression after each nursing.
5. Patience and perseverance.

Perhaps it is wise to reread the published work of Sedgwick to be inspired by his optimism, and enthusiasm in matters pertaining to maternal and Child Welfare. But to quote again his own words "When you think of Sedgwick think of breast feeding."

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THE DEVELOPMENT AND PROGRESS OF PEDIATRICS IN THE NORTHWEST

By C. A. STEWART, M.D.

MINNEAPOLIS, MINNESOTA

About the time of the close of the Civil War America boasted of its first and only Professor of Pediatrics, namely Dr. Abraham Jacobi, who is now recognized as the father of American Pediatrics. This infant among the branches of medical specialization soon outgrew its birthplace (New York City), and by 1888, at which time the present Medical School of the University of Minnesota was organized through the fusion of four separately existing medical colleges in the Twin Cities, we find that the faculty included a lecturer (Doctor Charles L. Welles) giving attention to instruction in that branch of medicine then spoken of as Pedology, which at that time was included as a subdivision of the Department of Medicine. Three years previously (1885) Dr. Welles, serving as chairman of the Section on Diseases of Children of the Minnesota State Medical Society, revealed his appreciation of future opportunities in the field of Pediatrics by the following comments:

"Less appreciated perhaps by both medical men and by the laity, less alluring and more circuitous as a pathway to fame, your committee would nevertheless, with real and genuine earnestness, urge the ever immediate and pressing demands of pediatrics upon all members of the profession, and express the belief that no field offers more brilliant opportunities for conscientious study and investigation."

About this time (1891) another physician appeared on the campus of the Medical School, coming from St. Paul by railroad to study and teach in the department of anatomy, his work being taken over later and continued to this day by Professor Charles (Chuck) Erdman. The following three years this physician devoted his time largely to the practice of surgery, and it was not until 1895 that he again reappeared on the campus, this time coming by street car, to serve as clinical lecturer in pediatrics. For thirty-five years this physician has maintained his interest in the pediatric department, and we now love, respect, and honor this St. Paul physician, Dr. J. T. Christison, Associate Professor of Pediatrics, University of Minnesota, Ex-Presi-

dent of the State Medical Association, not only for his years of excellent teaching but also for the wisdom he displayed in shaping the destiny of this branch of medicine in the Northwest. During the early nineties the department had ninety hours assigned for pediatric lectures and clinics. Following a request by Professor Christison for an increase to two hundred hours for pediatric instruction, a committee was appointed consisting of Drs. J. T. Christison, J. P. Sedgwick and G. D. Head, who reported unanimously in favor of the additional hours. The general faculty, after due consideration and considerable discussion finally granted the request, and thus the department was launched upon a new era which permitted it later to emerge as a separate department independent of the Division of Medicine.

Previous to this time, however, another physician had joined the medical faculty. This physician, a graduate of Nebraska University and Rush Medical College (1899), interned at Alexian Brothers Hospital and Presbyterian Hospital in Chicago. From there he went to Eveleth, Minnesota, as associate physician at Fabiola Hospital, where he remained from 1901 until 1904. He then went to the University of Berlin, devoting his time to graduate study in Pediatrics, and early in 1905 he returned to Minneapolis to engage in the practice of pediatrics exclusively, selecting this location since very few were engaged in this type of work in the Northwest. At first he taught Pharmacology and Physiological Chemistry, and it was not until November 1, 1915, that this physician, Professor Julius Parker Sedgwick, was made the first chief of the newly born independent Department of Pediatrics, a position which he held until his death, a brief but brilliant period of eight years. During this short time, with the assistance of Professor J. C. Litzenberg, he succeeded in establishing America's first and the World's second New Born Clinic under pediatric supervision. In addition this tiny department, consisting originally of only seven beds, became so well known that its roster of distinguished visitors included practically every outstanding

American Pediatricist. There are many who probably do not know that Professor Sedgwick's department conferred upon Dr. Rood Taylor the world's first degree of Doctor of Philosophy in Pediatrics.

In 1917, Professor Sedgwick was commissioned Major in the Medical Reserve Corps and established a center in Toul, France, for working out a health program for the children and mothers in the war zone. Dr. Sedgwick was a man of wide vision and tremendous energy, and had an organizing faculty of tremendous scope, which enabled him to give the Medical School a department occupying an enviable position among the pediatric centers of America. Professor Sedgwick's accomplishments were so valued that he was made consulting Hygienist on Pediatrics to the Surgeon General of the U. S. Public Health Service. This honor was given because of his work abroad, and also on account of his investigations in breast feeding.

Since Professor Sedgwick's death pediatrics has continued the growth which he so ably accelerated. The original seven bed department which produced seventy-seven scientific and clinical publications during the short period he was chief,

now has 50 beds, and a staff of 25 physicians. This growth was made possible by the generous gift of Mr. Wm. Henry Eustis of over \$2,000,000 for the construction and endowment of the Minnesota Hospital for Crippled Children and the Convalescent Home for Children.

In addition Minneapolis has the Children's Pavilion of the Abbott Hospital, which was built and equipped by the late Mr. T. B. Janney and Mrs. Mary E. Janney, his wife. Through the efforts of Dr. Walter R. Ramsey, St. Paul also has a hospital for children exclusively. Pediatrics now has so outgrown the Twin Cities that many of the larger cities of Minnesota, Montana, the Dakotas and other States farther west have physicians devoting their time exclusively to the care of children.

In recapitulation, however, despite the continued progress we are making in pediatrics, we are conscious of the fact that the pinnacle of excellence of attainment reached by Professor Julius Parker Sedgwick has never been excelled or equalled by those who preceded or followed him. Today he remains in our memory as the bright star among our Northwest pediatricists.

THE DEVELOPMENT OF PREVENTIVE MEDICINE IN THE NORTHWEST

(Continued from Page 66)

cated anywhere, and is a new idea in preventing human disease that already promises considerable success.

As Montana is the only State that has done any work on Rocky Mountain spotted fever, although it is now found in 13 States, it seems only reasonable that this Northwestern State should be relieved of the load by the Federal Government taking over the work and placing it under the Bureau of the Public Health Service.

The appeal of concerned individuals operating through unofficial health agencies, for concerted action to assist or supplement the activities of official health departments, has always met a hearty response from the people and more especially the profession of the Northwest. Even before the National Tuberculosis Association had perfected its organization, there had been begun the unofficial fight against tuberculosis under the

able leadership of such veterans as Dr. H. Longstreet Taylor.

The early establishment of State and local health departments, and the satisfactory success of unofficial health agencies were due in a large extent to the early recognition by the profession of the value of preventive medicine. So it was only natural that the profession in the Northwest should be among the first to realize that the individual practice of preventive medicine was a proper function of the profession, and we find today that collectively the profession in the Northwest has taken as advanced a stand as in any part of the country.

Individually, many are adopting much preventive medicine in their practice, and many have contributed largely to the store of knowledge and information tending to preserve health and prevent disease.

THE MEDICAL SCHOOLS OF MINNESOTA

By RICHARD OLDING BEARD, M.D.

Emeritus Professor, University of Minnesota
and Executive Secretary, The Health Council of
The City of Minneapolis and The County of Hennepin.

Minnesota, in its early history, was distinguished among its Sister States of the Northwestern group by the youthful age-period at which its first attempts at medical education were made. It is difficult to determine the sociologic reasons for this relative precocity. It is possible that the somewhat rapid passing of the territory and the infant State through its pioneer stages of development created a more than ordinary demand for doctors. The earlier evolution of an unusual number of small towns, scattered through the rural districts of Minnesota, probably gave a similar impetus to this demand. The initial trek of a marked number of physicians from the New England and Middle States, who brought with them the traditions of at least a small measure of formal professional training, undoubtedly served as a stimulus to them to engraft this type of medical education upon the newer civilization. There is an unfortunate lack of anything by way of a story of the motives of the men who took these first steps in foundationing the future of their calling. The generation which knew them has well-nigh passed. Few of us remain upon whose shoulders fell the mantle of that early school of the prophets to which Franklin Staples, D. W. Hand, J. B. McGaughey, D. A. Stewart and Talbot Jones belonged; few of us who can recall, amid the crudities of that pioneer period, the sterling manhood, the stalwart professionalism of these men, upon the fringe of our memories of whom still lingers something of "the grace of a day that has fled."

MEDICAL INSTITUTIONS
THE PREPARATORY SCHOOLS

To the left of St. Joseph's Hospital in the City of St. Paul, stood in 1868, and for several years thereafter, "the little stone dead-house," in the second story of which was a table, some chairs and a human skeleton.

In that upper room, a group of students, the members of which were "reading medicine" in the offices of the doctors of the hospital staff, gathered from day to day, bringing in amputated arms or legs now and then for dissection, making

a few tests of specimens conjointly, and listening irregularly to talks by the Staff members, among whom were Dr. D. W. Hand and the elder Dr. Stewart who did most of the teaching. They were inspired teachers. The pupils stood in fear of their quizzing powers.

That was the first attempt at class-teaching in medicine in the State of Minnesota.

Three years later, in 1871, appeared a circular letter, distributed to members of the medical profession in the principal cities of the State. It announced that "In accordance with resolutions, adopted in 1854 (seventeen years previous), by The American Medical Association, cordially approving of the establishment of private schools to meet the increasing desire, on the part of a respectable number of medical students, for a higher grade of professional education than can be acquired by "reading medicine," under the direction of a single instructor, a Board of Instructors (or faculty) had organized "The Saint Paul Medical School, Preparatory."

The President of this Preparatory School,—the recognized originator of medical college education in Minnesota, was that scholarly gentleman,—that prince of good fellows,—the late Doctor Alexander J. Stone. In addition to his administrative duties, not especially onerous, he headed the Department of Obstetrics and Gynecology. The Secretary of the Preparatory School, who lectured in Surgery and demonstrated Anatomy to the small group of students, was the late Doctor Charles A. Wheaton, of Saint Paul, the ablest surgeon of his day in his home city. A third, and perhaps the most erudite teacher of the group, was the late Doctor Talbot Jones, who lectured in Physiology. There were twelve members of the original Faculty, none of whom survive.

The Northwestern Medical and Surgical Journal was a contributor to the medical education of that day. It was the first medical periodical to be published in the State,—a direct predecessor of the Northwestern Lancet, now the Journal-Lancet.

Its issue of April, 1871, advised its readers that the course in the Saint Paul School, Preparatory,

was "in all respects thoroughly practical, using all available means of illustration; that the work in anatomy is given each year; and that the mode of teaching is by daily examinations, conducted by one of the teachers *in his office*; by occasional lectures and regular clinics, conjoined with oral discussions, *in which all the students participate*." There were advantages in this system which not all modern schools can afford.

The Northwestern Medical and Surgical Journal, announcing later the second session of the Saint Paul Medical School, Preparatory, states that it substitutes by individual "office instruction" in each topic "the scarcely more than nominal general instruction usually obtained in private offices." An effort was made to correlate its courses with those of the winter terms of the Chicago colleges.

In the year 1872, a rival venture was undertaken in the Winona Medical School, Preparatory. It was organized by Dr. Franklin Staples, of that city, with the aid of a group of five confederates. Seemingly there was room in the State for these two infant institutions, since they continued their modest programs until the year 1878-9. They were content to contribute a certain degree of betterment to the opportunities of training for the medical students of their day. They recognized the fact that they served as something of a preliminary step toward the evolution of the private medical college of the coming time. They granted no degrees. They were not licensed to confer any. No physical evidences, even, of their existence remain, saving a few announcements preserved as relics. Even the buildings which temporarily housed them have disappeared with the large development of the cities which gave them birth.

The Winona School modestly retired from the field at the close of the year 1879. The Saint Paul School blossomed out at the same time into the first medical college of the State. That there was already a demand for a more pretentious curriculum is suggested by the final announcement of the Saint Paul Preparatory. It was a curious one and it is perhaps fortunate that its students were spared the undertaking. Six hours of study, extending from 3:00 to 10:00 P. M., were to be provided. The class in dissections was to be conducted each evening from 9:00 P. M. to an unstated and probably unearthly hour. Chemistry and orthopedia were scheduled to be taught by one and the same professor. Imagine the orthopedist of today teaching chemistry. Anatomy, physiology, materia medica and therapeutics, obstetrics and gynecology, eye and ear, medicine and

surgery were apparently to be covered by lectures given at an identical hour and to the entire school.

THE PRIVATE MEDICAL COLLEGES

The Saint Paul Medical College, although chartered under its birth-name, succumbed to the temptation of a University affiliation during its opening year. It became the first department of medicine of Hamline University. Of its faculty were Dr. Alexander J. Stone, Dean; Dr. Charles A. Wheaton, Professor of Anatomy and Clinical Surgery; Dr. Frederick A. Dunsmoor, Professor of Surgery; Dr. C. Eugene Riggs, Professor of Nervous Diseases; and Dr. George Franklin French, Professor of Medicine. It opened with the respectable registration of twenty students. It savored of the ante-college days in respect of the fact that each student was assigned to an individual preceptor. It announced a two-year course, with the promise of its extension to three, —and eventually four years. It did not live long enough to fulfill the expectation. It was characteristic of the announced courses of the period that they varied in length all the way from eighteen weeks to nine months. The Hamline School essayed to cover six months.

This establishment was the beginning for Minnesota of the day of the private or proprietary colleges of medicine. Within a period of fifteen years, seven of these schools were created or re-created in this State.

First, came the Saint Paul Medical College, which, a year later, formed this medical department of Hamline University. This association continued but two years and then a combination of the Saint Paul with a Minneapolis group was arranged and the Minnesota College Hospital was incorporated. In 1883, the Minneapolis College of Physicians and Surgeons was organized. In 1885, the groups from the Twin Cities which had created the Minnesota College Hospital separated, —the one re-constituting the Saint Paul Medical College; the other establishing itself in Minneapolis, under the slightly changed name of the Minnesota Hospital College. In 1886, the adherents of the homeopathic medical profession in the State, chartered the Minnesota Hemeopathic Medical College. Again, in 1895, the Minneapolis College of Physicians and Surgeons was reorganized and became the Department of Medicine of Hamline University.

So much for the chronology of these events; a word with reference to their personnel, their local habitations, and their influence over the progress of medical education in the State.

The old Minnesota Hospital College, formed by a combination of Saint Paul and Minneapolis

forces, was headed by Dr. F. A. Dunsmoor, as Dean, and by such strong teachers as Drs. Stone, Wheaton, Fulton, Senkler and Riggs from the one City, and by Drs. French, Moore, and Abbott from the other.

Its home was in the old Winslow House, on Southeast Main Street, where it maintained thirty patients' beds and where it started its first clinics. Its classes grew rapidly and its standards, while not ranking among the highest, measured progress.

The Minneapolis College of Physicians and Surgeons was a reaction toward a new party school. It had a relatively small faculty group of twelve which gradually grew in numbers and in fealty to the school. It began its teaching in a modest way in the upper rooms of a business block at Washington Avenue and Fifth Avenue South. In 1893, it occupied a large house at Sixth Avenue South and Seventh Street. It started out with the ideal of a three-year course and a six months period and extended this to a nine-months period in the year 1903.

Its Dean, during the entire twelve years of its independent existence, was Dr. J. T. Moore, to whose faithful service the school owed much.

With the separation of the Saint Paul and Minneapolis groups, they severally reestablished the Saint Paul Medical College and created the Minneapolis Hospital College. A period of rather sharp rivalry ensued, characteristic of the strife for Twin City supremacy at all points. Dr. A. J. Stone reassumed the leadership of the one, and Dr. Dunsmoor continued the direction of the other college.

In material development and in point of student numbers the competition between the two schools served as a stimulus to each. Together they taught an increasingly larger number of students.

The Saint Paul College occupied its old quarters on Ninth and State Streets, a building still standing. The Minnesota Hospital College acquired property and put up a small, but substantial building at Sixth Street and Ninth Avenue South.

The Minnesota Homeopathic College represented an active, but never a large constituency in the State. It had a faculty of sixteen teachers, headed, as Dean, at its beginning, by Dr. Philo L. Hatch, and, later, by Dr. H. M. Goodwin, both of them strong men in their school. Its student numbers were limited to twenty at its most active period. The College was housed in an upstairs hall at the corner of Franklin Avenue and Fourth Avenue South. It served to build up, for the

time being, a new interest in homeopathic medicine.

THE LAST OF THE PRIVATE SCHOOLS

To return to the College of Physicians and Surgeons, which, in 1895, became the Department of Medicine of Hamline University, it enjoyed the longest life of any of these private medical schools. For five years after this adoption it rented the A. C. Rand house; until, in 1900, it built a home for itself on Seventh Avenue South and Fifth Street. For two years, following its adoption by Hamline University, its Deanship was given to Dr. J. W. MacDonald, and was then conferred upon Dr. Leo M. Crafts, until the year 1903; when it was taken over by Dr. George C. Barton, who held the appointment until the opening of the year 1908, when the Department of Medicine in Hamline University was merged in the Medical School of the University of Minnesota.

So ends the period of the private medical institutions of the State. All over the country these relics of the past had far outlived their age of temporary usefulness. And yet, in Minnesota there had been something of special merit in the continuance of this last of the local group. There was a natural fear of losing the closer personalities of the private school; of the substitution for them of the remoter relations of the public institution. It served, too, for the continued medical education of a group of earnest students whose pre-requisites of academic training had not been sufficiently standardized to conform to the academic rule. There were men and women, too, who cherished a love for the school they had fostered and who learned but slowly an allegiance to the University movement. For the final surrender of the lesser to the larger good much credit was due to the wisdom of the Hamline faculty, and much to the generous diplomacy of Dean Frank Fairchild Westbrook, who principally conducted the negotiations. By the terms of the agreement, the University undertook the continued education of students registered in the retiring school and Hamline University conferred the Degree upon those who were certified to it as satisfactorily concluding the course.

On the evening of December 8, 1908, was celebrated "The Unification of Medical Teaching in the State of Minnesota."

THE PRELIMINARY UNIVERSITY DEPARTMENT OF MEDICINE

To preserve the continuity of the story of the private medical college period, the introduction to

the development of medical education at the University of Minnesota has been postponed.

The one outstanding man, among the group of those who were responsible for the evolution of the event, was Doctor Perry H. Millard, then of the City of Stillwater and later of the City of Saint Paul. Early in his career he had conceived the idea of making the University of Minnesota the center of medical education in the State. Occasionally he advanced the project in a very tentative way. Early in 1882, he turned his attention to its possibilities, but he was altogether too wise to go directly toward his aim of a teaching institution. He understood the status of medical education in the private medical colleges of the time perfectly well.

One is reminded of the darkey preacher who announced to his congregation that he would preach on "the status quo." "But, Brudder," inquired the Deacon in the back pews, "what am de status quo?" "My Bredren," said the pastor, "de status quo am de Latin for de muss we is all in."

Dr. Millard knew that medical education, in most of its teaching institutions, was in a bad way. In fact, in many of these private schools, it was literally in a serious mess. An antidote must be found for the present conditions. Indeed, without a remedy for existing evils, the addition of another school, of whatever sort, would have meant "confusion worse confounded." If he had created a school of ostensibly higher standards than those already in operation in Minnesota, at that date, he would simply have made a world of trouble for himself and for the superior school. It would have been merely another case of the reformer be damned. And he would have suffered from a poverty of students. Had he reared another school on the dead level of the rest, he could have reached no distinction for his own and in no wise would the prevailing condition have been improved.

Dr. Millard found at his hand the readiest means to his end. He discovered a constitutional provision, under the State Constitution of 1853, which permitted the Board of University Regents to create a Department of Medicine, without any assumption of teaching functions, but to exercise purely examining powers over the graduates of any colleges applying for its certificate of approval.

As the first step in this direction, upon the recommendation of a Committee appointed for the purpose, the Board of Regents of the University of Minnesota, on January 5, 1883, created such a Department of Medicine. As its first faculty, it named Dr. Charles N. Hewitt, of Red Wing,

as Chairman or Chief; Dr. Daniel W. Hand, of Saint Paul; Dr. William H. Leonard, of Minneapolis; Dr. Franklin Staples, of Winona; Dr. Charles E. Smith, of Saint Paul; Dr. Charles Simpson, of Minneapolis; Dr. George B. Wood, of Faribault; Professor J. A. Dodge, of the University; and Dr. Perry H. Millard, of Stillwater, as Secretary of the Department. The staff was admirably chosen and strong in the leadership of its Chairman and its Secretary.

These men, under this direction, let no grass grow under their feet. The Legislature of 1883 promptly passed the first Act to Regulate the Practice of Medicine in the State of Minnesota, requiring all physicians to be licensed under the Act and conferring upon the Faculty of the Department of Medicine of the University the functions of an Examining Board, with power to approve and accept diplomas of recognized medical colleges, as evidence of fitness to practice, or to require the applicant for license to be examined by the Board.

The reins of government were in the hands of the University Department of Medicine. At its first meeting, it organized very positively for action, by the adoption of the following definition of a recognized medical school:

"Whenever any physicians, holding the degree of M. D. of a college recognized and approved by the Board of Regents, upon the recommendation of the faculty, to the number of four or more, in towns having a public hospital of not less than twenty beds, under the professional control of said physicians, shall associate themselves as a teaching body, and offer and give such text-book instruction, oral and written examinations and clinical teaching for such periods and in such manner as may be satisfactory to the faculty of this Department, they shall be recognized by said faculty as a 'school of medical instruction.'"

It further established three forms of examination to be conducted by its staff, which gave it a powerful leverage over the existing institutions:

"(1) An entrance examination, preliminary to the study of medicine, in writing, spelling, English grammar, arithmetic, United States history, general history, Latin grammar, and Caesar, or, equivalent to the latter, in French and German."

"(2) A scientific examination in the so-called pre-medical subjects of physical geography, natural philosophy, elementary botany, chemistry and drawing."

"(3) A professional examination for the degree of M. B."

"(4) To the graduate in medicine it offered the

further degree of M. D. upon the presentation and satisfactory defense of an approved thesis."

THE UNIVERSITY MEDICAL SCHOOL

This examining Department of Medicine gradually made its influence felt over the private medical colleges of the State. It stimulated their teaching; it lifted their standards; it made ready for the day, which had already dawned in certain parts of the country, of the coming of the University school of medicine. Nevertheless, it took six years of preparation to bring the most of the remaining private schools in Minnesota up to the point, in 1888, where they were ready to surrender their charters and to unite in the creation of a new Department of Medicine at the University of Minnesota,—a step which had been legalized already by the Legislature of 1887. The schools which so organized the Department were the Saint Paul Medical College, the Minnesota Hospital College, and the Minnesota College of Homeopathic Medicine.

Dr. Perry H. Millard was appointed Dean of the entire Department, which also included the Colleges of Dentistry and of Pharmacy. Eventually, these colleges, together with the College of Homeopathic Medicine, acquired their own Deans.

The course of the development of the College of Medicine and Surgery, the title of which was changed a few years later to that of the Medical School, can be but briefly traced.

Standards of measurement were not readily applied to any sort of medical school, and were scarcely possible of application to a University School of Medicine, in those days. They were without any adequate basis of comparison. So crude, besides, were the conditions under which the Minnesota college started as to suggest, for the time being, but little by way of distinction from the private institutions of the immediate past.

It had acquired a new name; it had a very slender budget,—and that was all. Of local habitation, so far as the campus was concerned, it had none. It continued to live in its down-town quarters, as before, for a period of five years. To its dissecting room and its small chemical laboratory it added, by way of equipment, a few microscopes. Dissecting material was, even then, lamentably scarce.

The transfer to the University had been mooted at the opening of the course of 1887-88 in the old College and the student registration had diminished under the expectation of higher requirements. Approximately 105 students includ-

ing two women, were admitted to the new school. Entrance was set at the University pre-requisite of a four-year high school diploma, but examination, under a Board of high school examiners, was still permitted. A characteristic of the period was noted in the greater average age of the student body—markedly above that observed in subsequent years. The comparative youthfulness of the faculty of 28 teachers was strikingly in evidence.

An annual fee of \$35 for residents and of \$60 for non-residents of the State was suggestive of the prevailing poverty of the students.

Although the course of study covered, at the outset, a period of three years,—a high level for those days, it was doubtless a concession to the need of annual earnings, upon which to maintain a living, which fixed the yearly term, for a time, at six months.

Statistics in the life of a medical school are of most value when they are comparatively stated. Progress is not always continuous, even when stated alone in numerical terms. Periodic influences are often possible to trace in numerical changes.

Nothing has proved more causative of an ebb and flow of registration than the prescribed length of the college term.

Thus the six months course laid down in 1888-89, was advanced to eight months in 1890-91; and to nine months in 1901-02. There it remained until the adoption of the four-quarter system in 1918.

Similar is the progressive movement in the total length of study for the degree. From the three-year requirement of 1888 to 1893, it was extended, in 1894-5, to four years. In 1898, the first joint course was offered, permitting the attainment of the B.A. and the M.D. degrees in seven years. In 1903-04, the six years course, with two years of academic work and four years in medicine, was optional. In 1907-08 it became compulsory. In 1914-15 the one-year hospital internship was announced as a requirement for the Degree of Doctor of Medicine.

The Faculty, which in 1888 numbered 28, to-day includes 336 teachers.

The student body which, at the birth of the school, had a roll-call of 105, in 1891-92, had increased to 124; in 1894-95 to 231; in 1917-18 to 296; in 1921-22 to 329; in 1924-25 to 424; and in 1929-30 to 540. It is now, reckoned in student numbers, one of the largest medical schools in America. Numerical size is not necessarily, however, indicative of high standing. Neither is

physical growth. Nevertheless, both are significant of the possibilities of real progress.

In 1893, by grace of a loan of \$65,000 made by Dr. Perry H. Millard to the University, in anticipation of a legislative appropriation, the old Millard Hall and the little Chemistry Building (popularly known as the Bowling Alley) were built and occupied jointly by the colleges grouped under the general term,—the Department of Medicine. The first Millard Hall has since been transferred to the College of Pharmacy and the little bowling alley has sunk beneath the foundations of new buildings.

In 1895-96, the Laboratory of Medical Sciences was added and, as its name suggests, it housed the laboratory chairs of pathology, bacteriology, histology and physiology. Later it became the home of the College of Dentistry and, in part, of the College of Pharmacy.

In 1906-07, the Laboratories of Pathology and Bacteriology, shared with the Laboratories of the State Board of Health, the building erected in that year and known initially as the Institute of Pathology and Public Health. This, too, in the course of time, became the joint and the fuller possession of the State Board of Health and also of the Department of Psychology.

The Medical School has, in fact, moved bodily to the new campus and has gone, veritably, through a panoramic development. It made the first departure in 1911, when it occupied the Elliot Memorial Hospital, the first link in the present chain of hospital and laboratory buildings. The Elliot Memorial was the product of a gift of \$120,000 from the estate of Dr. and Mrs. A. F. Elliot, given six years earlier, to which the State ultimately added the sum of \$83,000 for completion and equipment.

Following this came, in 1912, the great, but still unfinished laboratory buildings, known as Millard Hall and the Institute of Anatomy, costing the State the joint total of \$636,400. The Departments of Anatomy, Pathology, Physiology, Bacteriology, Pharmacology, the Administrative quarters of the School, and the Child Hygiene Division of the State Department of Health, remain housed in these two buildings.

During the same period, the Hospital Service Building was built and has since been enlarged at a cost, first and last, of about \$100,000.

In turn, the Cancer Memorial Institute, the gift of the Citizens' Aid Society, providing for forty hospital beds, research laboratories, amphitheatre, and equipment for radium supply, etc.,

at a total of \$250,000; and the Todd Memorial Clinic, housing forty patients, provided by gift of the family and friends of the late Dr. Frank C. Todd in the sum of \$40,000 and by appropriation from University funds of \$175,000, came along in the year 1923-4.

Then, in the year 1929 and 1930, followed the chain of hospital pavilions, forming the west wing of the clinical system—and including:

(1) The Eustis Hospital, containing forty orthopedic and forty pediatric beds. It is to care eventually for one hundred children. It was built out of the income from the endowment fund left by the late William Henry Eustis to the University.

(2) The General Outpatient Department of the Hospital; over-topped

(3) by the bed-service in obstetrics and gynecology; and

(4) The receiving and consultation rooms, the laboratories and the wards for the student health service.

The entire cost of this chain of pavilions is approximately \$865,000.

The men who, in turn, have been responsible for the conduct of the Medical School, are:

Dean Perry H. Millard, serving from 1888 to 1897. Deceased.

Dean Parks Ritchie, serving from 1897 to 1906. Deceased.

Dean Frank Fairchild Westbrook, serving from 1906 to 1912. Deceased.

Dean Elias P. Lyon, serving from 1913 to date.

The signal event in the history of the Medical School of the University is undoubtedly *The Unification of Medical Teaching in the State of Minnesota* finally accomplished in the year 1908.

The successive contributions to this achievement were:

(1) The surrender of the Charters of the Minnesota Hospital College, the Saint Paul Medical College and the Minnesota College of Homeopathic Medicine in February, 1888, and their union for the creation, by authority of the Legislature and the Board of Regents, of the teaching Department of Medicine at the University of Minnesota.

(2) The merger of the Hamline University Medical School with the Medical School of the University of Minnesota in February, 1908.

(3) The greater unity of medical science and teaching attained by the retirement from the edu-

THE EARLY HISTORY OF THE HENNEPIN COUNTY MEDICAL SOCIETY

The first physician of Hennepin County, or what afterwards became Hennepin County, was Dr. Purcell, who accompanied the army to Fort Snelling in 1820 as surgeon, and remained here in that capacity for some years.

The first civilian physician of whom we can find any mention in St. Anthony was Dr. Ira Kingsley, an herbalist. Dr. Kingsley probably came in the spring of '49, and does not appear at any time to have emphasized his medical attainments, figuring more frequently as a justice of the peace. He may well have been intimidated by the stern founders of St. Anthony, who apparently felt that the presence of physicians would damage the reputation of Minnesota as a health resort, and strongly discouraged them at every opportunity.

Dr. John H. Murphy, St. Anthony's first regular physician, came up the river with his wife in the spring of '49. He returned later to Rush Medical College, graduated, and began practice, probably at that time. He is mentioned in various lists of physicians as having become established here in 1850. Evidently he was not practicing in St. Anthony in September, 1849, when Miss Godfrey was born. The first medical advertisement which I found was in the Minnesota Chronicle and Register of September 23, 1850, and reads thus: "Dr. John H. Murphy, Front Street, a short distance below the mill, St. Anthony, Minnesota."

Dr. Murphy would seem to have been of the type of man created for pioneer practice with unquestioned ability he possessed, in addition, a fund of vitality, good humor, wit, and high spirits, which are almost as necessary in a pioneer physician as medical skill. He always wore a Prince Albert coat, in one pocket of which he was said to carry a spool of silk, and, if there was any surgery to perform he would take out the spool, cut off a piece of silk, sharpen his pocket knife on the heel of his shoe and say to the patient: "This is going to hurt and hurt like Hell but I can't help it so look out."

The St. Anthony Express of November 1, 1851, introduced to St. Anthony a man who was to play a very important part in the development of the two towns and to be the pioneer of the profession on the west side of the river, as Dr.

Murphy was on the east. This advertisement announces his arrival: "Drs. Murphy and Ames will continue the practice of his (sic) profession in St. Anthony and vicinity. Office, etc. And here is the editorial notice which the Express condescended to bestow on a mere doctor:

"Dr. A. E. Ames at this time is a resident of St. Anthony, and it is to be hoped permanently. By a reference to our advertising columns it will be seen that he has formed a business connection with Dr. Murphy. Dr. Ames brings with him the esteemed and best wishes of a host of friends, among whom are some of the most prominent citizens of Illinois. Dr. Ames is a graduate in the first class from Rush and came to St. Anthony from Roscoe, Illinois. He had been assistant secretary of State in Illinois for four years.

A volume might be written on Dr. Ames, and his beneficent activities in Minneapolis. Stevens says of him: "He held many offices without stint or limit." He most assuredly did, but, after all, perhaps no more beautiful tribute can be paid him than was given by Mrs. Hannah Munson when she said: "He was awful good to poor folks, was Dr. Ames. Never charged them nothing and was good to them as to richer people." Immediately on his arrival here he filed a claim on the west side of the river and moved there in 1852.

Dr. Hezekiah Fletcher came also in 1851, and became a prominent citizen of old Minneapolis, though not in a medical way. He was the third man to take residence claim on the west side of the river, as well as the third man to represent Hennepin County in the legislature. His name appears occasionally of lists of physicians but he is said to have been principally interested in real estate. He built a small house on a site which is now Portland Avenue between 14th and 15th Streets, at that time considered far back in the country.

In 1851, too, came Dr. N. E. Morey, whose card "respectfully offers his professional services to the City of St. Anthony and vicinity. Dr. Morey will attend to all operations in the practice of dentistry when not engaged in the practice of medicine and surgery. Dr. Morey can be found at all hours at his office on Main Street near Mr. Russell's store." Certainly, Dr. Morey was not

likely to be caught by the gentleman who was on the lookout for those with idle hands.

The year 1852 was an eventful one as far as the medical profession was concerned. Charles L. Anderson appears to have been the only addition to the list of physicians. He arrived in May from Indiana. Stevens gives the following of him: "He was a geologist, entomologist and florist of rare industry and attainment. He contributed many articles to the press. Early in the 60s he moved to the Pacific Slope. Tarrying a few years in Nevada he made there a very complete catalogue of Flora. For 20 years he has been a resident of Santa Cruz, California, where his skill and attainments as a scientist are widely appreciated. His two daughters are talented in a literary and artistic way."

Hennepin County (on the west side only of the Mississippi) was organized October 21, 1852. Col. Stevens says: "At the election held at my house eleven days previous there were 73 votes polled which comprised about half the voters. At a mass meeting held previous to the election the citizens nominated, irrespective of party, the following: A. E. Ames, Representative, etc. * * * all of these candidates positively refused to stand but the meeting as positively refused to excuse them. They were elected and were the first officers of Hennepin County. The first physician in the county was Dr. A. E. Ames, who dates this part as his home from October 18, 1851.

The year 1853 saw three additions to the medical ranks, Drs. A. E. Johnson and Z. or B. Jodon, and Dr. White. We have few data in regard to Jodon but Johnson became one of the prominent physicians. He was an inveterate smoker and always had a long meerschaum pipe hanging from his mouth. Dr. J. White was a graduate of the Medical College of Brunswick, Maine, and practiced here to his death, which occurred in 1856 at the age of thirty-three.

In July of this year Dr. L. Bristodeau began practice opposite Francis Huot's house on Main Street, St. Anthony. He later went to Dayton.

In October, 1854, Drs. A. R. Lincoln and C. W. Le Boutillier were added to the practicing physicians.

Dr. Dunsmoor, in "Hudson's Half Century of Minneapolis," and the "Tribune City Directory" for 1873-4 are authorities for the statement that the Union Medical Society (the precursor of the Hennepin County Medical Society) of St. Anthony and Minneapolis, was organized in 1855 at the residence of Dr. A. E. Ames, who was elected president, with Dr. Weelock, secretary. In at

least two other places the date of organization of the Society is given as 1856.

On June 7, 1870, the Society reorganized as the Hennepin County Medical Society. The meetings are held the first and third Mondays at places designated before adjournment."

The following account is from Dr. Edwin Phillips' article on the history of Hennepin County Medical Society.

The Hennepin County Medical Society was organized in 1856, a meeting for this purpose being held at the private residence of Dr. A. E. Ames, which was a small house situated between the old County jail and 9th Avenue South. The house faced on 4th Street, but stood far back in the yard so that it was nearer 5th than 4th Street. The founders and charter members of this Society were Drs. A. E. Ames, Charles L. Anderson, Asa E. Johnson, A. Ortman, John H. Murphy, William H. Leonard, C. W. Le Boutillier, Dr. Sewingburg (Lowenberg?) and Dr. Wheelock.

"Dr. A. E. Ames was elected the Society's first president and Dr. Charles L. Anderson the first secretary. The Society adopted a program of essays, reports of cases, and discussions, much the same as the Society is working under today. Dr. Asa E. Johnson furnished the first essay read. The methods of carrying on the Society during its primitive years, from 1856 to 1871, a period of 15 years, were as follows: After the program of reading and discussing the papers was carried the titles of the papers for the next meeting were announced, thus giving each member one month's time in which to prepare for the discussion of the papers for the next meeting, and the discussions were thorough and general.

"As the Society had no permanent place for meetings, they were held in the offices or residences of members, when held at the residence of some member, the wife and daughters usually invited the members, after the meeting was adjourned to a luncheon of coffee and sandwiches. * * * Some of the favorite places for holding meetings were at the residences of Dr. William H. Leonard, Fifth North and Second Street, or Dr. John H. Murphy on the corner of 6th Street and University Avenue S. E.

"During the Civil War the Society discontinued its meetings. In the fall of 1865 it was reorganized with Dr. A. E. Ames as president and Dr. Alfred Lindley as secretary. Dr. Ames went to California in the '60s and during his absence Dr. Nathan B. Hill was elected president and he held the office till Dr. Ames returned home, and

he was again elected president and held the office until his death.

"It may be of interest for those here to know that the first president of our Society was a licensed attorney. He was admitted to the bar at the time when Judge Flandrau of St. Paul was filling the offices of County Judge of Hennepin County.

"The Honorable Eugene Wilson moved to admit Dr. Ames to the bar. The doctor had at that time completed his new house which is still standing at the corner of 4th Street and 8th Avenue south, opposite the old county court house. He decided to christen the new house by giving the legal fraternity a royal banquet in response to the honor conferred on him.

There are many others among the older physicians of whom special mention might be made did the limits of this paper permit, but it will not be considered an invidious distinction, I think, if I refer particularly to the following:

Dr. Lindley was born in North Carolina in 1821, and came to Minneapolis in 1861. He was a well educated, reliable, conscientious, and successful physician, prominent in the sanitary interests of the city and its first health officer. As a result of judicious investments he became very wealthy and died in Minneapolis at the advanced age of nearly eighty-four years.

Dr. Ortman located in St. Anthony in 1857, was later active as a city and county physician and was one of the oldest members of the State Medical Society, of which he was made an honorary member without dues. He was a very excellent man, notable for his high ethical standards and kindly disposition.

Dr. C. G. Goodrich came to Minneapolis in 1868, and at once entered on an extensive practice. He was wealthy when he came, and invested largely in real estate. He was a modest, truthful, faithful, and generous man, and was the first elected president of Hennepin County Medical Society following the death of Dr. Ames.

The following is a list of presidents from 1855 to date:

- 1855—President, A. E. Ames.
- 1862—President, A. E. Ames.
- 1867—President, A. E. Ames.
- 1868—Presidents, A. D. Ames and N. B. Hill.
- 1869—President, A. D. Ames.
- 1870—President, A. D. Ames.
- 1871—President, A. E. Ames.
- 1872—President, A. D. Ames.
- 1873—President, A. E. Ames.

1874—Presidents, A. E. Ames and Chas. Simpson.

1875—President, C. G. Goodrich.

1877-78—President, Edwin Phillips.

1878-79—President, J. W. Murray.

1879-80—President, A. H. Lindley.

1880-81—President, O. J. Evans.

1881-82—President, Chas. Simpson.

1883-84—President, C. L. Wells.

1884-85—President, R. J. Hill.

1885-86—President, Woodling or Salisbury.

1888-89—President, E. J. Brown.

1889-90—President, W. J. Byrnes.

1890-91—President, J. Harlan Stuart.

1891-92—President, J. Harlan Stuart.

1892-93—President, W. A. Hall.

1893-94—President, J. W. McDonald.

1894-95—President, C. G. Weston.

1895-96—President, W. A. Jones.

1896-97—President, J. W. Little.

1897-98—President, J. C. Cockburn.

1898-99—President, L. A. Nippert.

1899-00—President, H. B. Sweetser.

1900-01—President, A. W. Abbott.

1901-02—President, H. L. Staples.

1902-03—President, J. W. Bell.

1904—President, C. H. Hunter.

1905—President, D. O. Thomas.

1906—President, F. C. Todd.

1907—President, J. E. Moore.

1908—President, F. A. Knights.

1909—President, J. D. Simpson.

1910—President, C. A. Donaldson.

1911—President, T. F. Quinby.

1912—President, C. H. Bradley.

1913—President, H. H. Kimball.

1914—President, C. A. McCollom.

1915—President, R. E. Farr.

1916—President, J. G. Cross.

1917—President, A. S. Hamilton.

1918—President, E. K. Green

1919—President, J. C. Litzenberg

1920—President, J. F. Corbett

1921—President, Geo. D. Head

1922—President, A. E. Benjamin

1923—President, Frank L. Adair

1924—President, C. B. Wright

1925—President, Emil S. Geist

1926—President, Frederick A. Erb

1927—President, S. R. Maxeiner

1928—President, A. E. Hedback

1929—President, N. O. Pearce

1930—President, E. L. Gardner

1931—President, Stephen H. Baxter

THE NORTH DAKOTA STATE MEDICAL ASSOCIATION

By J. GRASSICK, M.D.

GRAND FORKS, NORTH DAKOTA

A full decade before entering statehood, the physicians of the northern part of the Territory of Dakota were feeling the benumbing influence of isolation and were casting about for ways and means of remedying conditions. There were at



"COURAGE"

By Rene Chambellan

this time scarcely two score of practicing physicians in a country of upwards of seventy thousand square miles. From this it may be inferred that individual members of the profession ministered to the scattered settlers in great stretches of country, in some instances larger than a New England State.

The pioneer physician was in the very nature of things an individualist; his calling and his secluded field of service combined to make him so. He was supposed to be able to "Box the Craft," so to speak, and to be equal to any emergency, and he knew not a day in advance what might be required of him.

As a matter of fact, it was the unexpected calls that were most in evidence, for the settlers in the new country were of the young, strong, robust, active, vigorous type, and in a measure immune to the ordinary, commonplace ills of life. It might be a case of fever where the venom of disease had wasted the body and forced reason from its throne; a gangrenous extremity, the result of frostbite, awaiting amputation; a rider of the range that has been thrown from his mount and

a fractured bone thrust into lacerated, quivering flesh, needing setting; a man crazed with drink who has emptied his gun, with or without evil intent, and left an ugly, angry bullet wound in a comrade's body, requiring skilled attention; an irreducible hernia calling for an immediate operation; or it might be away out yonder in a settler's sod shanty two lives are hanging in the balance. Nature exhausted or thwarted by some malcondition has failed to complete the cycle, and the birth of a new life and the safety of the mother depend on the timely arrival and the trained hand of help.

In few of these emergencies is there a professional consultant within reach to confirm diagnosis, share responsibility or assist in pushing aside, the curtain that shuts out the bright rays of hope; no qualified anesthetist to administer the lethal drug that lulls the sufferer into unconsciousness; no trained assistant to lend a helping hand, to do his bidding or anticipate his needs; and no white garbed nurse to prepare the patient, sterilize instruments and dressings, watch over, soothe or comfort the ailing one, or woo back to life and strength the weakened frame.

These and similar ministrations gave ample opportunities for service and the development of self-reliance, but on the other hand they deprived the physician of the benefits that come from touching elbows with those of like aims, aspirations, and ideals, and from keeping abreast with the latest developments in medicine and surgery. And so it was that there came to be felt a common need for association and coöperation, that resulted in organizations at first local, then State wide.

When the Northern Pacific Railway crossed the Red River of the North in 1872, Fargo became the gateway to the great plains beyond, and by 1875 it was organized as a city. It grew rapidly, and by 1880, claimed a population of about one thousand, among whom were listed a dozen resident physicians, while in the country tributary there were probably as many more.

This coterie of adventurous spirits who had felt the restraints of the East too exacting, the freedom of the West too enticing, the opportunities for adventure too alluring, or let us hope, the

affords too appealing, formed the nucleus of what later became a strong, virile, and progressive medical association. In Abott and Nichol's, 1881, Fargo Directory, there is this entry: "Red River Medical Association. This Association founded in Fargo (1880) included the fraternity of Moor-longing for fields of service, which a new country head, Casselton, Wheatland, Caledonia and Grand Forks. The officers were Dr. John Kurtz, Moor-head, President; Dr. E. M. Darrow, Fargo, Treasurer; Dr. Conan, Fargo, Secretary." In the 1882 Directory we find this entry: "Cass County Medical Society organized December, 1881. President, R. T. Rolph; Vice President, S. W. Humphrey; Secretary, H. G. Fish; Treasurer, W. C. Sherlock."

It will thus be seen that Fargo had not only the first medical society of which we have any record in what is now North Dakota, but the one that has had a continuous existence from 1881 to the present time, becoming the Cass County District Medical Society after the organization of the North Dakota Medical Association.

Like other societies it has had its ups and downs, its fat years and lean years, but it has always kept aloft the banner of progress and shed a beneficent influence over regular organized medicine in the State. Members of the medical profession in other centers of population more or less dense, felt the urge of methodical organization and fell into line. Bismarck, Grand Forks, Northwood, and other cities where there were "two or three" congenial minds, formed societies and discussed their common problems.

The physicians in what is now South Dakota were actuated by similar ideals, and here and there over the Territory at strategic points the leaven of professional unity and helpfulness was seen to be at work. The societies thus far mentioned were more or less local in scope and operation. It was not until 1882 that Drs. O. S. Pine and H. G. Rose, both of Milbank, issued a call to the physicians of the Territory to meet at Milbank on June 3. Ten responded and became charter members of the first Territorial medical society in Dakota. In the meantime the physicians in the northern division of the Territory were getting busy, and under the leadership of Dr. J. G. Millspaugh, of Park River, the North Dakota Medical Society was organized at Larimore in 1887. At this time and place Dr. C. D. Conkey, of Larimore, Dr. J. G. Millspaugh of Park River, Dr. F. G. Lundy of Inkster, Dr. A. P. Rounsevell of Larimore, and Dr. John Montgomery of Ardock met in an informal way and steps were taken

towards organization. Dr. J. G. Millspaugh was made President and Dr. John Montgomery Secretary and Treasurer. The following year, in the month of May, the new Society met in Grand Forks and a permanent organization was completed. The officers elected were: President, Dr. J. G. Millspaugh; Secretary, Dr. A. P. Rounsevell, and Treasurer, Dr. J. E. Engstad.

Thus was launched this sturdy craft on the seas of organized medicine, and although it has been tossed to and fro, buffeted by storms, and threatened by sunken reefs, after forty-four years of



"ACHIEVEMENT"

By Rene Chambellan

earnest endeavor it rides the waves, trim and staunch, with "Service and Progress" flying from its masthead.

Since its organization there have been several outstanding incidents that have contributed to its stability and success. When its first constitution and by-laws were adopted, at the suggestion of the late Dr. H. M. Wheeler, of Grand Forks, the Code of Ethics of the American Medical Association was made its rule and guide. There are those who believe that some parts of the Code are antiquated and not in keeping with present day concepts. It is safe to assume that were it to be rewritten at this day and age it would not appear in its present form. There have been many changes in the years since 1847, and this applies to beliefs and ethics as well as to material things. What was accepted as truth yesterday may be in the discard today, and what is rank heresy today may be doctrinally acceptable tomorrow. This much, however, may be said of the Code: if interpreted in the light of the times in which it was written, it appears as a fine

OFFICERS OF THE ASSOCIATION WITH DATE AND PLACE OF
EACH ANNUAL MEETING SINCE ORGANIZATION

Year	Place of Meeting	President	Secretary	Treasurer
1887	Larimore	Preliminary Meeting	J. Montgomery	J. Montgomery
1888	Grand Forks	J. G. Millspaugh	J. E. Engstad	A. P. Rounsevell
1889	Larimore	J. G. Millspaugh	C. D. Conkey	A. P. Rounsevell
1890	Jamestown	J. G. Millspaugh	Geo. McIntyre	A. P. Rounsevell
1891	Fargo	Henry W. Coe	Geo. E. Jackson	Geo. McLain
1892	Grand Forks	W. C. Sherlock	D. E. Moore	Geo. McLain
1893	Jamestown	A. P. Rounsevell	G. A. Carpenter	J. A. Rankin
1894	Valley City	I. N. Wear	G. A. Carpenter	J. A. Rankin
1895	Fargo	A. B. Herrick	G. A. Carpenter	J. A. Rankin
1896	Wahpeton	H. M. Wheeler	G. A. Carpenter	J. A. Rankin
1897	Grand Forks	J. P. Aylen	R. D. Campbell	J. A. Rankin
1898	Jamestown	Aug. Eggers	R. D. Campbell	J. A. Rankin
1899	Fargo	F. R. Smyth	R. D. Campbell	J. A. Rankin
1900	Grand Forks	Geo. F. Bates	Paul Sorkness	J. A. Rankin
1901	Fargo	H. J. Rowe	E. C. Branch	J. A. Rankin
1902	Grand Forks	H. D. Quarry	E. C. Branch	W. H. Philip
1903	Bismarck	G. A. Carpenter	C. L. Brimi	W. H. Philip
1904	Fargo	W. H. Bodenstab	E. C. Wheeler	W. H. Philip
1905	Grand Forks	J. A. Rankin	H. J. Rowe	J. D. Taylor
1906	Fargo	Paul Sorkness	H. J. Rowe	J. D. Taylor
1907	Minot	R. D. Campbell	H. J. Rowe	J. D. Taylor
1908	Grand Forks	Chas. MacLachlan	H. J. Rowe	J. D. Taylor
1909	Fargo	H. A. Beaudoux	H. J. Rowe	J. D. Taylor
1910	Grand Forks	J. E. Countryman	H. J. Rowe	J. D. Taylor
1911	Fargo	H. H. Healy	H. J. Rowe	Frank J. King
1912	Valley City	C. E. Spicer	H. J. Rowe	Frank J. King
1913	Minot	A. J. McCannel	H. J. Rowe	Frank J. King
1914	Grand Forks	M. McGregor	H. J. Rowe	C. S. Crane
1915	Bismarck	R. H. Beek	H. J. Rowe	C. S. Crane
1916	Devils Lake	V. H. Stickney	H. J. Rowe	W. F. Sihler
1917	New Rockford	V. J. LaRose	H. J. Rowe	W. F. Sihler
1918	Fargo	G. M. Williamson	H. J. Rowe	W. F. Sihler
1919	Grand Forks	E. A. Pray	H. J. Rowe	W. F. Sihler
1920	Minot	W. P. Baldwin	H. J. Rowe	W. F. Sihler
1921	Fargo	Fred Ewing	H. J. Rowe	J. P. Aylen
1922	Jamestown	H. E. French	H. J. Rowe	J. P. Aylen
1923	Grand Forks	E. P. Quain	H. J. Rowe	W. W. Wood
1924	Bismarck	J. Grassick	H. J. Rowe	W. W. Wood
1925	Fargo	W. C. Fawcett	A. J. McCannel	W. W. Wood
1926	Minot	J. H. Rindlaub	A. J. McCannel	W. W. Wood
1927	Grand Forks	N. O. Ramstad	J. G. Lamont	W. W. Wood
1928	Devils Lake	Thos. Mulligan	J. G. Lamont	W. W. Wood
1929	Fargo	W. F. Sihler	J. G. Lamont	W. W. Wood
1930	Bismarck	John Crawford	C. MacLachlan	W. W. Wood
1931	Aberdeen, S. D.	A. Carr, Sr.	A. W. Skelsey	W. W. Wood

epitome of just standards of professional rights and duties, and a reflection of the altruistic ideals of the high-minded physicians of a former age. It has well served its purpose of keeping alive the spirit of ethical medicine and discouraging practice by charlatan and quack. It has been a "shelter from the storm" for many a weary traveler, and a guiding star for those who were seeking a haven of safety. The North Dakota Medical Association has been better for having the Code as its guide.

Previous to Statehood, the practice of medicine in the Territory of Dakota was regulated, first,

by the Legislative Code of 1869 and later by that of 1875. Recognizing the need for further legislation governing the practice of medicine in the State, a committee was appointed in 1889 to draft a bill for presentation to the first State Legislature. On this Committee were Drs. Wear, Darrow and Tiegen, of Fargo, and Drs. Millspaugh, Wheeler, Montgomery, and Hamilton from the northern part of the State. Dr. John Montgomery of Ardock, a member of the State Assembly, fathered the bill in the Legislature and secured its passage. It received the approval of the Governor January 10, 1890. This is the law that

(Concluded on Page 95)

HISTORICAL SKETCH OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION

By J. F. D. COOK, M.D.
LANGFORD, SOUTH DAKOTA

PREAMBLE

On December 27, 1860, a representative convention was held in Yankton to take action in regard to Territorial Organization. As an outcome Congress was memorialized and a bill introduced. On February 26, 1861, it passed the Senate and on March 1, 1861, the House. On March 2, it was signed by President Buchanan, and the Territory of Dakota thus came into corporate existence. In May of the same year, President Abraham Lincoln appointed Dr. William Jayne, a practicing physician of Springfield, Illinois, as Governor. The Territory of Dakota thus has the distinction of having had a Regular Physician as its first Governor.

FIRST ANNUAL MEETING. Milbank, Dak., June 3, 1882.

In response to a call issued by Drs. Pine and Rose of Milbank a meeting of physicians was held in the parlor of the Grand Central Hotel at Milbank, Grant County, Dakota Territory, for the purpose of organizing a medical association in and for Dakota Territory. To appoint delegates to represent Dakota Territory at the meeting of the American Medical Association to be held at St. Paul, Minnesota, June 6, 1882.

The meeting was called to order and Dr. A. Grant of Bath was elected temporary chairman, Dr. W. E. Duncan of Ellendale temporary secretary.

Upon motion the society was organized to be known as the Dakota Medical Association.

On motion the chairman appointed Drs. Pine, McGlumphy and Rose as a committee of three to draft a constitution and by-laws.

The committee report on constitution and by-laws was adopted, to which the following names were subscribed: H. G. C. Rose, M. D., Milbank; O. S. Pine, M. D., Milbank; A. Grant, M. D., Bath; S. B. McGlumphy, M. D., Yankton; J. B. Van Velsor, M. D., Yankton; D. Frank Etter, M. D., Yankton; W. E. Duncan, M. D., Ellendale; L. F. Diefendorf, M. D., Aberdeen; J. G. Conly, M. D., Elk Point; J. C. Morgan, M. D., Sioux Falls.

Meeting adjourned to 2 p. m.

Order called at 2 p. m. by Dr. A. Grant.

Permanent officers were then duly elected as follows: President, S. B. McGlumphy; First Vice-President, O. S. Pine; Second Vice-President, A. Grant; Secretary, H. G. C. Rose; Assistant Secretary, L. F. Diefendorf; Treasurer, O. S. Pine; Censors, A. Grant, W. E. Duncan, D. Frank Etter.

S. B. McGlumphy and O. S. Pine were elected delegates to the American Medical Association.

Upon motion the secretary was authorized to draw upon the treasurer for the necessary funds for books, stationery, postage, etc., for the ensuing year.

On call Dr. McGlumphy read a paper on "Our Professional Likes and Dislikes."

SPECIAL MEETING. Canton, August, 1882.

Pursuant to call by the president, Dr. S. B. McGlumphy, the Association met in special session in Bedford Hall, Canton, August —, 1882.

Mayor Gifford was introduced and in a bright and spicy address welcomed the fraternity to the city.

On motion the president appointed Drs. Morgan and Van Velsor to fill the board of censors.

Recess of fifteen minutes taken.

Order called.

Upon favorable report by the board of censors, Drs. Etter, Morgan and Van Velsor, the following were elected members of the Association: J. B. LeBlonde, M. D., Sioux Falls; Stephen Olney, M. D., Sioux Falls; W. A. Germain, M. D., Sioux Falls; O. O. Sawyer, M. D., Dell Rapids; M. M. Clark, M. D., Canton; F. P. Smith, M. D., Canton; S. V. Ross, M. D., Yankton; A. L. Peterman, M. D., Parker; H. Stites, M. D., Sioux Falls.

Credentials were received from delegates from the Black Hills Medical Society as follows: Joel Houghton, M. D., Hot Springs; D. K. Dickerson, M. D., Lead City; J. C. O'Neal, M. D., Deadwood; Jos. Van Buskirk, M. D., Rapid City.

This indicates a society in the Black Hills. So far we have not been able to find the records of this early society.

The following resolution was adopted:

RESOLVED, That the committee on State Medicine and Hygiene be instructed to draft a bill regulating the practice of medicine and surgery, and the qualifications of physicians, and report the same at the special meeting to be held in January, 1883.

SECOND ANNUAL MEETING. Sioux Falls, May 16, 1883.

President Dr. S. B. McGlumphy called the Association to order.

The regular routine of business, the election of men to membership in the Association.

Dr. S. B. McGlumphy gave an annual address.

THIRD ANNUAL MEETING. Mitchell, May 24, 1884.

Dr. Frederick Andros, president, presiding.

Free discussion of medical topics and the usual business after which the Association adjourned to meet at Aberdeen May 27, 1885.

FOURTH ANNUAL MEETING. Aberdeen, May 27, 1885.

President Dr. J. B. Van Velsor in the chair.

In the 1885 session of the Legislature of Dakota Territory an act was passed establishing Territorial and County Boards of Health and providing for the protection of the health of persons and animals. This act was approved by Governor G. A. Pierce March 12, 1885.

The matter of incorporating the Association was discussed and Drs. Van Velsor, McNutt, Pine, Andros and W. E. Crane were appointed a committee to draft the constitution and by-laws and to report the same at this meeting.

At the evening session the committee reported a constitution and by-laws which was duly adopted by unanimous vote.

FIFTH ANNUAL MEETING. Turner Hall, Yankton, May 20, 1886.

President Dr. Geo. W. Moody in the chair.

Delegates were announced and received from the Central Dakota Medical Society.

This is the second society to send delegates to the State Association.

Meeting adjourned to meet at Huron.

In 1886 the Dakota Medical Association was duly incorporated.

SIXTH ANNUAL MEETING. Huron, Dak., June 16, 1887.

President Dr. J. C. Morgan of Sioux Falls presiding.

Drs. Coyne, McLean and Cook were received as delegates from the Aberdeen District Medical Society.

The third society to send delegates.

SEVENTH ANNUAL MEETING. Masonic Hall, Redfield, Dak., June 21, 1888.

Called to order by the Secretary and Dr. S. J. Coyne was elected presiding officer pro-tem.

At this meeting there were 14 new members whose applications were duly received and they were elected to membership.

At this session a paper was presented by Dr. Fred Treon of Chamberlain, entitled "Surgery Among the Sioux Indians," Crow Creek Agency, D. T., June, 1888. Space will not permit the inclusion of this paper.

EIGHTH ANNUAL MEETING. Masonic Hall, Mitchell, S. Dak., June 20, 1889.

Vice President Dr. Coyne, presiding.

It appears from the record that the president of the Association, Dr. F. Andros of Mitchell, S. Dak., had developed cataract of both eyes and was assisted in conducting the meeting by Dr. Coyne, vice president.

Records show a membership of 93 at the close of this session.

NINTH ANNUAL MEETING. Odd Fellows Hall, Sioux Falls, June 12, 1890.

The usual program and business was carried out.

A resolution was duly carried to have the proceedings of the Association printed to date. A Committee on Publication had 160 copies printed and a copy was forwarded to each member of the Association.

The Association considered the starting of a medical library.

Death has again been invading our ranks, taking from us an old and esteemed member, Dr. D. Frank Etter, a physician distinguished by his talents. Dr. Etter graduated from his profession in 1863, practicing a number of years in the east, located in Yankton, Dakota Territory, 1874. Died at his home in Yankton, April 4, 1890.

Mention is also made of Dr. Van Velsor of Yankton, one of the oldest physicians and surgeons of Dakota. One of the first members of this Association.

TENTH ANNUAL MEETING. Chamberlain, S. Dak., June 10, 1891.

The records show that articles of incorporation were received, "South Dakota State Medical Society," dated June 10, 1891.

A special meeting was called for May 20, 1891, at Mitchell, S. Dak. At this meeting the incorporation was completed.

SPECIAL MEETING. Chamberlain, S. Dak., June 11, 1891.

The meeting called for the perfection of the organization.

The Committee on By-Laws made their report and the Constitution and By-Laws were adopted for the South Dakota State Medical Society.

The members of the old Society present joined the incorporated Society at this meeting.

ELEVENTH ANNUAL MEETING. Salem, S. Dak., June 8, 1892. Held in G. A. R. Hall.

President Dr. Ware in the chair.

At this meeting a Committee on Legislation reported and recommended a bill to license physicians in the State of South Dakota.

TWELFTH ANNUAL MEETING. June 10, 1893.

No business was transacted and adjourned to meet at Huron, June, 1894.

THIRTEENTH ANNUAL MEETING. June 10, 1894.

Called to order and adjourned to meet June 20, 1894.

ADJOURNED MEETING. Huron, June 20, 1894.

Called to order by President Dr. Peterman.

Scientific program. Dr. H. Longstreet Taylor read a paper entitled "Lymphoid Growth in the Vault of the Pharynx."

FOURTEENTH ANNUAL MEETING. Parker, S. Dak., June 12, 1895.

President Dr. R. T. Dott presiding.

By resolution Dr. Jepson of Sioux City, Iowa, was made honorary member of this Society.

The Fee Bill adopted at this time.

FIFTEENTH ANNUAL MEETING. Yankton, S. Dak., June 10-11, 1896.

Meeting was called to order by Vice President Dr. William Edwards of Bowdle.

It appears that to be eligible to membership one must read a thesis before the Society. A discussion as to admission of members without a thesis was participated in and the Committee on Credentials were instructed to accept the report of a case in lieu of a thesis.

Dr. F. W. Cox read a paper entitled "Imperfections of Our State Medical Law."

The consensus of opinion following the discussion was to the effect that, this Medical Society should use its influence and plan a concerted action toward adequate public health supervision, through the State Board of Health.

SIXTEENTH ANNUAL MEETING. Mitchell, S. Dak., June 9, 1897.

President Dr. W. E. Edwards presiding. The president gave his annual address.

Dr. Treon of Chamberlain, read a paper, "Sanitation and Education of the American Indian."

A resolution tendering thanks to his Excel-

lency Governor A. E. Lee and commending him for the sterling courage and good sense shown in refusing the sanction of his signature to a certain measure of the last legislature, detrimental to the public health and interests, entitled "An Act to Legalize Osteopathy."

This is the first record of irregulars presenting a measure to our legislature.

SEVENTEENTH ANNUAL MEETING. Sioux Falls, S. Dak., June 15, 1898.

President Dr. W. E. Moore presiding.

The usual scientific papers were read. Business transacted.

A committee to formulate a law regarding the practice of medicine in the State of South Dakota made their report. It was agreed that the Committee on Legislation should meet in Sioux Falls on the first Tuesday in October for the purpose of perfecting such a bill.

EIGHTEENTH ANNUAL MEETING. Yankton, S. Dak., June 15, 1899.

Meeting called to order by President Spafford.

A Legislative Committee report favorable to the Minnesota law governing practice of medicine and surgery, including section of the Kentucky law and section of the Iowa law.

NINETEENTH ANNUAL MEETING. Aberdeen, S. Dak., June 14, 1900.

Meeting called to order by President Dr. D. W. Rudgers.

He delivered his annual address entitled "What Is Man That Thou Art Mindful of Him."

TWENTIETH ANNUAL MEETING. Huron S. Dak., June 10-11, 1901.

President Dr. C. M. Keeling presiding.

A resolution relative to the prevalence to smallpox in the State and variously labeled "Cuban measles," "Cuban itch," "Porto Rican itch," "chicken pox," and "smallpox." That we, the members of the South Dakota State Medical Society, hereby pronounce this epidemic to be "smallpox," and therefore, for the protection of the public health, we advise the most rigid quarantine for all cases or thorough vaccination as the most efficient method of preventing the spread of this pest.

TWENTY-FIRST ANNUAL MEETING. Scotland, S. Dak., June 4-5, 1902.

President Dr. C. C. Gross presiding.

At this meeting the reorganization of the society along with the plan recommended by the American Medical Association was discussed.

Dr. E. L. Brown, Dr. Warne, and Dr. Edwards were appointed by the president as a committee.

The committee recommended the reorganization plan recommended by the American Medical Association, to be put in operation during the present year.

TWENTY-SECOND ANNUAL MEETING. Mitchell, S. Dak., May 27, 1903.

Vice President Dr. B. A. Bobb presiding.

The Committee on Reorganization designated the territorial limits of each district society.

TWENTY-THIRD ANNUAL MEETING. Redfield, S. Dak., June 1, 1904.

This is the first session under the reorganization as proposed in 1902, and duly adopted in 1903.

At this meeting, the Association, by resolution, again attempted to create interest in the proper recording of vital statistics for the State.

TWENTY-FOURTH ANNUAL MEETING. Deadwood, S. Dak., July 5-6-7, 1905.

President, Dr. Charles B. Mallory, presiding.

The usual routine of business was conducted and scientific programs held.

TWENTY-FIFTH ANNUAL MEETING. Watertown, S. Dak., May 22-23-24, 1906.

President, Dr. A. H. Bowman, presiding.

At this session Dr. W. A. Jones, of Minneapolis, appeared before the Association and made a proposition that we combine forces and allow the Journal-Lancet to become the official journal of our Association with that of North Dakota.

A committee was appointed to consider the matter.

The committee reported to continue the printing of the transactions in pamphlet form as in the past.

Dr. W. E. Edwards, at this session, tendered his resignation as secretary, and Dr. R. D. Alway, of Aberdeen, was elected secretary-treasurer.

TWENTY-SIXTH ANNUAL MEETING. Sioux Falls, S. Dak., May 28-29-30, 1907.

President Dr. E. T. Ramsey, presiding.

The Legislative Committee were quite active during this year and appointed an attorney to rewrite a portion of the Medical Practice Act defining the practice of medicine and surgery covered by the laws of 1903.

Drs. Robinson and Michael gave conscientious work in defeating such bills as would be detrimental to the public welfare and health, and were instrumental in advancing such legislation as would be of benefit.

The chairman of the legislative committee, in conjunction with the Pure Food Commissioners of the State, promulgated a law regulating the

manufacture and sale of foods within South Dakota.

At this meeting a contract was entered into with the Journal-Lancet for publishing the transactions of the Association.

TWENTY-SEVENTH ANNUAL MEETING. Yankton, S. Dak., Sept. 2-3-4, 1908.

The Committee on Legislation made a report, with recommendations that the Medical Practice Act was an improvement over the old act; however, it needs several changes and advising that a bill should be drafted removing the appointment of members of the Board of Medical Examiners and Superintendent of State Board of Health from partisan politics.

Upon motion, the Committee on Public Policy and Legislation was instructed to make a diligent effort to secure an adequate appropriation for the use of the State Board of Health.

TWENTY-EIGHTH ANNUAL MEETING. Aberdeen, S. Dak., Sept. 29-30-Oct. 1, 1909.

President Dr. S. A. Brown, presiding.

State Association, through the President, Dr. S. A. Brown, did considerable personal work and had introduced by Dr. J. J. Martens, member of the House, South Dakota State Legislature, Bill No. 236, providing for the reappointment of the Board of Health, consisting of five members, three of whom should be selected by the governor from a list presented to him by the State Medical Association. Also for the establishment of a laboratory and its maintenance. An appropriation of ten thousand dollars asked to carry out the provisions for this bill.

This bill was defeated.

Dr. Robinson, of Pierre, also gave considerable time and influence to procure the enactment of the Martens Bill.

The Senate Bill regulating quack advertising was introduced and enacted.

TWENTY-NINTH ANNUAL MEETING. Hot Springs, S. Dak., Sept. 27-28-29, 1910.

President Dr. T. B. Smiley, presiding.

Routine business and scientific program were carried out.

THIRTIETH ANNUAL MEETING. Pierre, S. Dak., June 14, 1911.

President Dr. H. M. Finnerud presiding.

At the last annual meeting a charter was issued to the Hot Springs District Society and at the Special Meeting of the House of Delegates and Board of Councillors this charter was revoked for reasons which are stated in the minutes of that meeting.

THIRTY-FIRST ANNUAL MEETING. Mitchell, S. Dak., May 22, 1912.

President Dr. W. G. Smith presiding.

Dr. J. F. Adams, secretary of the Aberdeen District Society made a request to the president, Dr. W. G. Smith, that because of the prevalence of tuberculosis and trachoma among the Indians on the Cheyenne Reservation, those affected should be given proper care and treatment to eradicate this disease, and that this condition should be brought to the attention of State and National Government.

At this meeting, the Association recommended increased hospital facilities on the Reservation for the protection of the Indians. Thus remove a danger of contagion to white settlers.

It was directed that a copy of this resolution be forwarded to the State Board of Health at Pierre, to our Congressmen of South Dakota, and to the Department of the Interior.

THIRTY-SECOND ANNUAL MEETING. Vermillion, S. Dak., May 27, 1913.

President Dr. C. E. McCauley presiding.

Drs. C. E. McCauley and R. D. Alway, with the advice of a number of members of the Association, had a Board of Health Bill drafted and presented to the legislature for action.

This bill greatly increased the powers of the Board, combined the State Examiners Board and the State Board of Health, increased the appropriation, and put the appointment of the officers into the hands of the State Medical Association, by submitting to the governor a list of satisfactory men from which to make the appointments.

This bill was unsuccessful as originally drafted.

His excellency, the governor, soon put the scissors to the paragraph relating to the appointment of officers. He deleted the State Medical Association recommendations as to the membership on the Board.

Dr. McCauley deserves honorable mention for the success of this bill, making several trips to the capitol in its interests.

THIRTY-THIRD ANNUAL MEETING. Watertown, S. Dak., May 26, 1914.

It appears from the transactions that the Rosebud District was granted a charter and entitled representation at this meeting, they having a membership of 12.

Resolution directed to Congress asking Congress to provide for the mental examination of arriving immigrants by physicians in the United States Public Health Service. Those physicians should be trained in the diagnosis of insane and

mental defects, to provide for the detention and care of all mental defective immigrants at our larger ports of entry.

A copy of this resolution to be forwarded to the President, Vice President of the United States, Surgeon General, Commissioner General, Chairmen of the Senate and House Committees on Immigration and to each member of the South Dakota delegates in Congress.

THIRTY-FOURTH ANNUAL MEETING. Sioux Falls, S. Dak., May 18-19-20, 1915.

President Fred Treon, of Chamberlain, presiding.

Dr. C. S. Bobb, of Mitchell, who had been a member of the legislature, advised and so moved that the Association employ legal help to assist in drafting a bill to be presented at the next legislature.

Dr. J. L. Stewart, of Spearfish, who was appointed organizer of the Association, made his report. Dr. Stewart spent considerable time traveling over a greater part of the State.

THIRTY-FIFTH ANNUAL MEETING. Aberdeen, S. Dak., May 23, 24, 25, 1916.

President Dr. J. B. Vaughn, of Castlewood, presiding.

Communication of National Scope was presented from the American Medical Association, the Medical Association of New York City in regard to health insurance.

Bills have been introduced in the legislatures of New York, New Jersey, and Massachusetts which would provide for medical care of the insured during illness.

The House of Delegates recommended that this body should give the matter due consideration, defeating such legislation by coöperation with the American Medical Association.

The State Association, in convention assembled, addressed the governor submitting names of medical men who would be acceptable to the State Medical Association for appointment on the State Board of Health and Medical Examiners.

At this session of legislature the Chiropractors presented a bill which was defeated.

For its defeat much credit is due to Dr. R. D. Alway, County Judge Kimble, also Senator Stevens of Hughes county.

THIRTY-SIXTH ANNUAL MEETING. Yankton, S. Dak., May 28-29-30, 1917.

President Dr. F. M. Crain, of Redfield, presiding.

THIRTY-SEVENTH ANNUAL MEETING. Mitchell, S. Dak., May 21, 1918.

President Dr. H. J. G. Koobs, Scotland, S. Dak., presiding.

A Committee on Hospitals to determine what hospitals in the State were qualified to furnish satisfactory internships was appointed as follows: Dr. C. E. McCauley, Aberdeen; Dr. S. M. Hohf, Yankton; Dr. F. A. Spafford, Flandreau; Dr. F. E. Clough, Lead, and Dr. G. G. Cottam, Sioux Falls.

Committee on Medical Defense reported at this time, and the Association directed the Secretary to enter into a contract with the United States Fidelity and Guarantee Company of Maryland for such liability insurance.

THIRTY-EIGHTH ANNUAL MEETING. Watertown, S. Dak., May 20, 1919.

President Dr. D. L. Scanlon, of Volga, presiding.

Dr. Spafford, chairman of the Medical Corps Committee, made his report in which he states that nearly 200 of the medical profession of the State have cheerfully answered the call, given up their practices, accepted commissions and have responded to their orders. Nearly 500 in this State have been connected with war work, either in the Medical Corps, or attached to some one of the various Local and Medical Advisory Boards under direction of the Provost Marshal General's office. The State of South Dakota has reason indeed, to be proud of the medical men in the Great War.

THIRTY-NINTH ANNUAL MEETING. Sioux Falls, S. Dak., May 18, 19-20, 1920.

President Dr. H. T. Kenney presiding.

Through the efforts of the Medical Association, a Department of Hygiene has been instituted in the Normal Schools of the State.

FORTIETH ANNUAL MEETING. Aberdeen, S. Dak., May 24-25-26, 1921.

President Dr. G. S. Adams presiding.

A new set of By-Laws were adopted according to the plan of the American Medical Association. State dues were raised to \$6 per capita.

Committee on Medical Legislation reported that, as instructed, they had prepared a bill which was designed to establish a preliminary educational standard for candidates desiring to practice the healing art. This bill provided for the appointment of a preliminary educational examining board, composed of three educators selected from the major educational institutions of our state; this board to pass upon the educational qualifica-

tions of all candidates to practice the healing art in South Dakota. (This bill would be termed a basic science bill. Edt.)

The committee believe that the failure of this bill to become a law was due to the lack of organization and assistance from the regular medical profession.

The committee recommend that every effort be made to secure legislation to transfer the Department of Medical Licensure from the State Board of Health to a separate board, the secretary of which should be appointed from a list of names submitted to the governor by the Association, that such appointee should also act as a secretary of this Association, an annual renewal license fee to be required of every legally qualified physician, which would entitle him to membership in the State Medical Association. This report was discussed and adopted; however, it does not appear that this became a law.

FORTY-FIRST ANNUAL MEETING. Huron, S. Dak., May 16-17-18, 1922.

President Dr. G. G. Cottam presiding.

A petition was presented by Dr. A. E. Bostrom of De Smet, signed by the physicians of Kingsbury County asking that a charter be granted Kingsbury Society, No. 11.

Upon consideration the petition was granted and a charter issued, to be known as District No. 11.

Dr. T. F. Riggs, chairman of the Committee on the Workman's Compensation Law, reported that their committee made a report and moved its adoption and also a copy to be sent to each physician in the State.

Dr. Cottam, of Sioux Falls, addressed the House of Delegates in regard to a memorial for the late Dr. Frederick A. Spafford. The plan was adopted and a committee appointed to receive subscriptions for a memorial to be placed in the Memorial Building of the State University.

FORTY-SECOND ANNUAL MEETING. Watertown, S. Dak., May 22, 1923.

President Dr. F. E. Clough presiding.

The Association adopted the following scientific program: That wherever possible, clinics should be provided for the forenoon, and scientific papers in the afternoon.

Endorsement of the action of the Veterans' Bureau in the curtailing of the Chiropractic Training Course for veterans.

FORTY-THIRD ANNUAL MEETING. Mitchell, S. Dak., May 20-21, 1924.

President Dr. R. L. Murdy presiding.

A resolution to be adopted approving the Gorgas Memorial.

FORTY-FOURTH ANNUAL MEETING. Sioux Falls, S. Dak., May 20, 1925.

Legislative Committee defeated the attempt of the Osteopaths to present a bill allowing them to do major surgery. The committee was ably assisted by a House member in defeating this measure; Mrs. Moody, wife of Dr. Moody, of Sanator, was the member of the House who decidedly aided in the defeat of this measure.

A Hospital Bill was presented by the Osteopaths which would permit them access to all hospitals in the State. This measure was also defeated.

Spafford Memorial report by Dr. G. G. Cottam, chairman of the committee, reports that an oil painting had been procured and placed in the rotunda of the capitol and that a surplus of \$314.47 was the balance on hand. He advised that in place of a bronze tablet commemorating Dr. Spafford that this balance be placed in a scholarship fund of one thousand dollars, the proceeds of this to be used for the best student in Virgil at the State University. The president of the University, Dr. Slagel, personally proposed this and said, that he would make up the deficiency of the one thousand dollars to be placed in the trust fund, the interest on which is to be used annually in continuing the Spafford Memorial Scholarship in Virgil.

The House of Delegates concurred in the resolution and adopted the scholarship in Virgil.

FORTY-FIFTH ANNUAL MEETING. Aberdeen, S. Dak., May 19, 1926.

President Dr. W. R. Ball, of Mitchell, presiding.

A resolution adopting the "Periodic Health Examination" on your birthday. A copy of the Periodic Health Examination, published by the American Medical Association, was mailed to every doctor in the State. It was urged that every physician should adopt this Periodic Health Examination personally so that he may be an example to his community and show them that he was willing "to take his own medicine" by having "an examination on his birthday."

Committee on Legislation Public Policy recommended that the State Association have a bill drafted by a competent attorney to amend the Workman's Compensation Act making the maximum fee for physician's services \$150 and for hospital expense \$150, total of \$300.

FORTY-SIXTH ANNUAL MEETING. Huron, S. Dak., May 3-4-5, 1927.

President Dr. T. F. Riggs, of Pierre, presiding.

In recognition of the efficient services rendered to the Medical Association of the State by the State Health Laboratory of Vermillion, the following resolution was duly adopted: be it,

RESOLVED, that we unqualifiedly commend the splendid work carried on by the State Health Laboratory and that its director be complimented for the value of the services rendered and the high degree of efficiency to which the Laboratory has attained.

(Signed)

C. E. McCauley, A. G. Allen, S. M. Hohf.

During the session of the legislature, the Workman's Compensation Law was recommended to allow a maximum of \$100 each for professional services and for hospital charges. A total of \$200.

The statute of limitations was reduced from six years to two years for hospitals, physicians and dentists in malpractice suits.

A Vital Statistics Bill was presented, meeting Federal regulations, which was carefully prepared in the Attorney General's office, but was thoroughly devitalized through amendments and died in committee.

The introduction of a Basic Science Law was under consideration when a situation developed which made it seem advisable to postpone this effort until another session.

The Osteopathic Association's proposal to introduce a bill granting their members license to do major surgery, was a matter of common knowledge, a bill was drafted and a hearing held before the joint committee on Public Health with the object in view of having it introduced as a Committee Bill. After a conference of the medical men and the osteopaths with their attorney, a compromise bill was drafted which was presented to the legislature and passed both bodies and the Governor vetoed the same.

FORTY-SEVENTH ANNUAL MEETING. Battle Mt. Sanatorium, Hot Springs, S. Dak., June 7-8-9, 1928.

President Dr. S. M. Hohf, of Yankton, presiding.

Report was presented of the Regional Meeting of the Minnesota, Wisconsin, North and South Dakota Associations. The presidents, vice presidents and secretaries of the above named Associations met at St. Paul. Organization was perfected to meet each year to discuss such items of vital interest of the Association as presented.

The Committee on Liability and Group Insurance was present. Dr. D. D. Jenne, field representative of the United States Fidelity and Guaranty Co., presented the details of their plan. The Association adopted the Group Insurance Policy. Each member to make application to the company, paying the annual premium. A master policy to be deposited with the secretary of the State Medical Association.

Committee on Legislation and Public Policy brought up the discussion of the Basic Science Law. No definite action was taken regarding the Basic Science legislation.

The general meeting approved of the resolution of the House of Delegates in respect to Group Insurance.

FORTY-EIGHTH ANNUAL MEETING. Mitchell, S. Dak., May 7-8-9, 1929.

President Dr. N. K. Hopkins, of Arlington, presiding.

A special meeting of council and officers was held at Huron, October 18. The council and officers of the Association constitute the legislative committee. A Basic Science Bill was discussed with an attorney, the Honorable A. R. Wyman.

A Basic Science Bill was constructed in accordance with the legal advice, following the outlines of a model law promulgated by the American Medical Association.

The final adoption of a new Constitution and By-Laws was completed at this session.

A report of the Committee on Education given by Dr. J. C. Ohlmacher, chairman, of Vermillion, S. Dak., was enthusiastically received and adopted. A Basic Science Bill, as adopted by the Legislative Committee, was presented to the legislature but because of opposition from a certain group within the State Medical Association, the committee deemed it best to withdraw this measure.

FORTY-NINTH ANNUAL MEETING. Sioux Falls, S. Dak., May 20-21-22, 1930.

President Dr. L. N. Grosvenor, of Huron, presiding.

The secretary, J. F. D. Cook, of the State Medical Association, proposed that, as the next annual meeting would be the fiftieth annual session, a joint meeting at a convenient point for North and South Dakota State Medical Associa-

tions for celebrating this event would be an outstanding episode in the history of the Associations.

A committee was appointed to confer with the North Dakota State Medical Association relative to a joint meeting, the committee, consisting of the president, Dr. Percy D. Peabody; vice president, Dr. W. A. Bates; councillor of Aberdeen District, Dr. M. C. Johnston; Dr. A. E. Pittenger of Aberdeen, and Dr. J. F. D. Cook of Langford, secretary of the South Dakota State Medical Association.

A conference was held with the North Dakota State Medical Association at their annual session at Bismarck. The House of Delegates of the North Dakota Association graciously received the committee from South Dakota State Medical Association and concurred in the proposition unanimously, agreeing that this would be a very nice thing to do, and later appointed a committee to make arrangements with the South Dakota committee for the consummation of plans for such a meeting. The date of meeting was decided for June 1, for the meeting of the House of Delegates and Council of both State Associations and a scientific program to be carried out the 2nd, 3rd and 4th of June.

We are anticipating a very successful session.

A committee was appointed to confer with extra medical health activities in this State. The committee to report at the next annual session. Program in which the State Medical Association may be helpful in an advisory capacity.

A special committee was drafted to make a survey of the State University Medical School, who report at this time, commending the dean and faculty on the splendid work. A copy of which was sent to the president of the University, dean of the Medical School and the Board of Regents.

Dr. C. G. Lundquist, of Leola, a member of the Revision Committee of the Course of Study of the Department of Education, is to be commended for his part in assisting in that work. As a physician he is able to adequately represent organized medicine of this State.



THE COSTS OF HOSPITAL CARE

By BERT W. CALDWELL, M. D.

Executive Secretary of The American Hospital Association

The costs of hospital care concern not only those who have a hospital experience, but all who support our hospitals, either directly or indirectly, and that large number of the medical and nursing profession who constitute the professional staff of all institutions. It would be interesting to analyze what proportion to the total cost of medical care our people are paying for their hospitalization.

Each year the people of the United States pay \$2,130,000,000 for their care, when sick, of which amount \$380,000,000, or slightly more than one-seventh of the total, is spent for their hospitalization. The annual cost for medical services of all kinds, exclusive of those furnished the sick for whom the government is responsible and are cared for at government expense, is as follows:

For patent medicines and drugs.....	\$700,000,000
For fees for physicians	650,000,000
For hospital care.....	380,000,000
For the employment of nurses, both trained and practical	200,000,000
For dental care	150,000,000
For the payment for fees of ir- regular practitioners.....	50,000,000

The amount paid for hospital care is one half of the amount paid for patent medicines and drugs; a little more than one half the amount paid for surgical and medical attention, excluding the amount paid for the attention given by irregular practitioners; less than twice as much as that paid for nursing attention; and two and one half as much as paid for dental care.

The average family pays a total of \$80.00 a year for all medical services, of which \$15.00 a year is paid to the hospital, \$24.00 a year to physicians; \$25.00 a year for patent medicines and drugs; \$8.00 a year for nursing attention; \$6.00 a year for dental services, and \$2.00 a year for fees to irregular practitioners.

Health is purchaseable and is the cheapest commodity which is offered to our people. Medical and nursing attention and hospital care are, in no sense, luxuries, but are the necessities of life that are within easy reach of all of our people. This immense annual expenditure for health, not including sanitation, would, in no case, be burdensome if some plan were devised by which this

charge could be evenly distributed. The discussions that have filled the literature during the past year or more, concerning the excessive charges made for medical, nursing, and hospital care, have no foundation in fact.

The \$380,000,000 which the people of the United States pay for their hospital care, if distributed to each unit of our population, would cost less than \$3.25 per annum, or less than one cent a day for each of our population. But the amount which is paid by the people for their hospitalization does not equal the cost of the hospital operation by a very large margin. The \$380,000,000 referred to is only the amount of money which the people pay for the hospital service, and does not include the amount of charity which the hospitals give the people each year and which is a direct charge against the operating disbursements of our institutions, nor does it include the amount derived for the support of the hospital by taxation.

The greatest tangible service which the hospital renders is, of course, in the care of its patients, and this is what the patient pays for when he pays for the hospitalization. But joined with this great service is a very large educational service, for which the patient is not charged, and for which the public makes no remuneration. The cost of maintaining this educational service is an important part of the hospital's operating disbursements. It cannot be replaced in any other class of institution. It is joined with its clinical material and other special facilities in the hospital for the education and training of the physician, the nurse, and other public welfare personnel.

The cost of hospital operation has greatly increased by the very emphatic part which all hospitals play in the field of preventive medicine. The hospitals must and do provide all of the essential equipment for the correct diagnosis of disease, as well as its treatment. Through its facilities, and in its laboratories, are worked out in a more correct manner, than at any time previous in the world's history, the early diagnosis of communicable disease and of those borderline

cases which, if undiagnosed, will condemn the sufferer to a restriction in his earning capacity, if they do not condemn him to definite invalidism.

The hospital patient today is afforded every detail of environment that will contribute to his early return to health. In addition to his food and lodging, he receives medical service, nursing service, and other care which, if it were purchased outside of the hospital, would amount to a great deal more than the amount he pays the hospital. When sickness is being considered, few of us are provident. The sick day is that evil day long deferred which we all hope we will avoid, and fail to realize we must sooner or later experience. No sum has been appropriated out of our savings to provide against this misfortune.

The hospital's burden of the cost for the care of indigent patients is age old; the cost of the educational service it renders, of the maintenance of its research activity, and of its work in preventive medicine is as new as it is necessary. Whereas the hospital experienced a great deal of difficulty in operating under old conditions, it is unable to operate under existing improved conditions without additional revenue, and still maintain the same rate of hospital charges as has previously governed. Neither physician nor patient nor public would have our institutions go back to the old order of things, and even if it were possible, the hospitals would not do so. Everything that the hospitals use and pay for, from labor to linens, has increased in cost far in excess of the hospital rates charged. Food costs run higher. The cost of every sort of supply has almost doubled. The refinement of excellence seems to be the rule in purchasing, rather than the desired utility, and thus, through the insistence of the public and the staff, the hospital finds itself obliged to contract for the expenditure of funds which it well knows cannot be earned with the income received for the care of patients.

While the unit cost of hospital care has progressed upward during the last twenty years, the returns which the hospital makes to the patient have definitely lessened the cost of his illness, and added to the length of his life and to the happiness that goes with good health.

The period of a hospital experience has been reduced materially, and diseases which, not so many years ago, were considered incurable are now, under modern methods, either cured or controlled. The incidence of morbidity has been decreased, and very largely due to the modern methods of operation of our institutions. The hazards

of illness are not so great as they were ten years ago, and the assurance of the recovery of the patient is more definite.

The public confuses the amount which it pays for all the services incident to illness, with the proportionately small amount which it pays for hospital care. It is very much inclined to the belief that the hospitals receive all the money which is paid for medical attention during illness. This is, by no means, true. Few hospitals operate for the purpose of earning dividends for those who are financially interested in them. Ninety-eight per cent of the institutions in this country are chartered and operated for "no profit." They are peculiarly charitable institutions, serving the individual when he cannot serve himself, and, frequently, when his friends or family can do nothing for him. If they were not charitable institutions serving the community in this good way, they would fall far short of discharging their obligations to the public.

During the present financial depression, which has extended for considerably more than a year, our hospitals have been operated with a greatly decreased income from patients who were formerly able to pay, in whole or in part, for their hospital care, and the hospitals have, almost without exception, had an increased number of patients admitted. The revenues which the hospitals have received from every source have been much less during the depression than for many years previous. But the hospitals have continued to operate, to increase their facilities for the care of the indigent sick, and no instance has been reported where a hospital has refused admission to a patient, during this period of financial stringency, for the reason that he was without funds.

The cost of hospital operation has, for the past several years, been constantly mounting. This has been due to the necessity of installing for the care of the patient, whether pay or charity, all of the essentials to a careful and correct diagnosis of his illness, as well as those things that are necessary for his treatment and rehabilitation.

In common with every line of business and charitable effort, the hospitals have learned wholesome lessons of economy during the past year. More attention will be paid in the future to the expenditure of funds for those things which are necessary to the care of the patient. The construction of hospitals will be on a less elaborate plan than previously, but they will be just as efficient and operated at a lowered cost.

There are several ways in which both the public

and the medical profession may contribute to lowering the cost of hospital care to the patient. These costs will be lowered, and materially lowered:

When, the capital investment in hospitals is confined to well built, well ventilated, well lighted buildings, adequately equipped to provide the best of diagnostic and treatment facilities for the patients.

When, a larger proportion of ward and semi-private accommodations at a rate much lower than private rooms is provided.

When, the public is educated to use hospital accommodations in keeping with their financial ability to pay for hospital service.

When, the public, of its own choice, selects

moderate priced hospital accommodations instead of expensive private rooms.

When, the patients are educated by their attending physicians and by the hospital authorities, to use the floor nursing service provided by the hospitals at all times when special nursing service is unnecessary.

When, the cost of caring for indigent patients is equably distributed between the State and the hospital.

When, economy is exercised in the purchase and use of hospital supplies, equipment and facilities.

When, the average citizen as a class provides in his budget or his financial arrangements against the day when he or his family will need hospital care.

THE NORTH DAKOTA STATE MEDICAL ASSOCIATION

(Continued from Page 84)

Dr. John Fulton, of St. Paul, referred to in an address at Jamestown, in 1890: "You have now in this state the most excellent law for the control of scientific medicine and surgery and the prevention of charlatans and quacks of any State in the Union."

Due to the foresight and progressive spirit of such leaders as Dr. Wheeler, Secretary of the Board of Medical Examiners, Dr. Smyth, Dr. Aylen, and others, a steady progress was made towards higher educational standards, and the way paved for the Medical Practice Act of 1911, which is still in force. The chief points of interest in this splendid piece of forward looking legislation may be summed up as follows: Fixing a premedic standard of at least two years of college work, making reciprocity a discretionary and not a mandatory measure, and granting licenses, after written, oral and practical examinations. Quoting from Dr. Geo. M. Williamson, present Secretary of the State Board of Medical Examiners: "There has been a steady progress in the upbuilding of a stronger body of medical men in our country, and North Dakota has not been found wanting in this forward movement."

There is probably no easier or better way of getting a lineup on an organization than by investigating the standing of its officials. The North Dakota Medical Association has been fortunate in the choice of its leaders. With scarcely an exception they have been, not only of

the highest standing in their profession, but men who would have graced any positions of trust or responsibility to which they might have aspired.

The accompanying table will give at a glance the presidents, secretaries and treasurers from the organization of the Association until the present time, their dates of service and the place where the annual meetings were held.

An examination of the above leaves the impression of stability and progress. To such men we owe much. To have vision is one thing, but to have the ability to make our dreams take on tangible form and become actualities is quite another. It took faith for the pioneer physicians to form themselves into an organization for social, economic, and professional betterment, to look ahead and feel that they were building for the future. Their faith was well founded, for the organization has steadily progressed through the years, keeping pace with the material achievements of the country and the advance of the medical profession throughout the world.

As we round out a half century of organized medicine in North Dakota, a period of unprecedented progress in the healing art as well as in other lines of human endeavor, we cannot better "Hallow the fiftieth year" than by dedicating ourselves to a solution of the problems of the new age and demonstrating by our actions that the medical profession is actuated, as it always has been, by the highest ideals of humanity.

THE ADVENTURER-SURGEON

THE LIFE OF DR. JUSTUS OHAGE, OF SAINT PAUL

By JUSTUS G. SCHIFFERES, B. A., M. A.

The youngest soldier in the Army of the Potomac lay wounded in the hospital at City Point, Virginia. It was April of the year 1865, and Lee had just surrendered at Appomattox. Abraham Lincoln was in the vicinity and he came to visit the hospital where the young soldier lay. When he heard from the chief surgeon the true story of the lad's great bravery and extreme youth, Lincoln came directly to his cot, shook the boy's hand and said to him, "My boy, I thank you for the help you gave us. I hope you will be well soon and with your father and mother. God bless you!"

Lincoln's hope was fulfilled, for by fall of the year '65, the erstwhile youngest soldier of the Army of the Potomac was back in Hannover, Germany, his parent's home, and pursuing again with zeal the studies that his romantic impulses had driven him to abandon for the sake of adventuring in the New World. Besides his classical studies, Greek and Latin, which he learned with great thoroughness, the boy found time to pick up some of the rudiments of medical and surgical knowledge at his father's clinic. For his father was a doctor, as his father had been before him, and for several generations back. The boy was Justus Ohage, and his father, Dr. Georg Ohage, of Hannover.

Justus Ohage was born in Hannover on October 13, 1849. He attended the Gymnasium and Lyceum in that city, but always with some distaste, for he was by nature an athletic and energetic person whom the routine of the schoolroom cramped. His various adventures to escape from the tedium of school finally culminated in the runaway trip to America, which gave him the opportunity of fighting in the Civil War and of making the acquaintance, through Sergeant Lippincott, an older companion of his in the Eighth Regiment of the New Jersey Volunteers, of the glories of the American outdoors. This love for the great outdoors, fostered by the Maine backwoodsman, has never left Dr. Ohage, though he now approaches his eighty-second birthday. He leaves a record of his adventures as a woodsman, fisherman, and hunter in a book of his, privately printed and distributed among his friends, "Sixty Years With Rod and Gun." All



JUSTUS OHAGE

these adventures, extraneous as they may seem to the career of medicine, nevertheless go to show the temperament of boldness and accuracy which are the characteristic equipment of a great surgeon; and it is in the field of surgery that Dr. Justus Ohage has done some of his most significant work.

It is interesting to note, however, that much extraordinary training and many odd adventures were to come upon the man before he had even chosen medicine as his profession. From the years 1865 to 1870, he was studying and working with his father and Prof. Werner Langenbeck, nephew of the great Langenbeck, of Berlin, and an associate of his father in the clinic at Hannover. In the war of 1870 we find him serving as a stretcher bearer in Europe, but in the year 1872, after having crossed the ocean back and forth several times as a common sailor before the mast, the great American outdoors has drawn him back to this country and he is serving as a medical

assistant on the construction crew of the Topeka, Atchison Railroad. Here again the young man brushes against another well known destiny, for the man who supplied meat to this hard working construction crew was none other than Buffalo Bill Cody himself.

After this railroad job of his, the young medical assistant found some excellent relaxation on hunting grounds that have always attracted him, the Missouri Bottoms, particularly in the vicinity of the Quiver River. This neighborhood has since become one of the most expensive and exclusive hunting grounds in America.

From Missouri, he went up to Toledo, Ohio, where he spent some time with an old family friend, Dr. Wuesterfeld. Here he was joined for some months by his younger brother, Georg, a chemist; and here too he fell in with a Frenchman, Chateau, who first brought him up to hunt big game in that part of the country whose beauty and grandeur of scenery was later to induce him to make it his permanent home—the great Northwest.

In 1876, however, attracted again by the fine wild fowl hunting, he returned to the Missouri Bottoms. Nevertheless, his first purchase after his return had nothing to do with hunting or fishing. It was a piano. In spite of all his roaming, the young man had found time to develop a great skill and fine appreciation of music. About this time he happened to meet a young medical student, Thomas Ensor, whose tastes in dogs, guns and horses were very akin to his own. Young Ensor introduced Ohage, then twenty-seven years old, to his father, Dr. Sidney Ensor, a graduate of Guy's Hospital and Thomas Hospital, London, and to his sister, Augusta Jane. The result of these introductions was the marriage of Augusta Ensor and Justus Ohage on the tenth of May, an important day in the young man's calendar because it was also the date of his mother's birthday, 1877, and his immediate decision to go up to the medical school at the University of Missouri, in Columbia, to get his degree in medicine. He helped to work his own way through school and served as a prodissector in anatomy during his senior year. He was graduated M. D. in June, 1880.

After graduation he left immediately for Germany, taking his wife and child with him, and with characteristic zeal and energy he plunged into an extended course of postgraduate medical study, with especial emphasis on surgery. He studied at Göttingen, his father's university, and at Kiel. Here he worked under the famous Pro-

fessor von Esmarch and saw, among many other things, the first cure of sarcoma of the jaw by an accidental infection of erysipelas. Further work at Berlin brought him under the tutelage of von Virchow, the great pathologist, and Bernard von Langenbeck, the celebrated surgeon. Later he went to England, where he worked at the hospitals from which his father-in-law had graduated, Guy's and Thomas's. From there he went on to Edinburgh, and had instruction in abdominal surgery from Keyes.

In the winter of 1881, he returned to Hannover and served an internship in the "Henriettenstift." Realizing the necessity of getting down seriously to the business of medicine, he plunged into his work as an interne with such pertinacity and eagerness that his remarkable record still lingers as a legend in that hospital.

Having thus compressed his internship into a small space of time, he brought his family back to America in the spring of 1881. On May tenth, his double anniversary day, he arrived in St. Paul, and being particularly attracted by the natural beauty of its location, set among white cliffs and green bluffs in a bend of the mighty Mississippi, he decided to set up in practice here. His first office was at Seventh and Wacouta Streets, and his first office associates, men who were his very good friends, were Dr. Parks Ritchie and Dr. Edward Spencer. Another of his friends was Dr. William Worrell Mayo, of Rochester, who thought so much of Dr. Ohage as a surgeon that he used to send his sons, Will and Charles, up to St. Paul, to watch him operate on surgically interesting cases. This was in the late 80's when Dr. Ohage's fame as a surgeon had spread far.

His most important operation was the first cholecystectomy performed in this country. The operation had been performed several times before in Europe, and of this fact Dr. Ohage's acquaintance with European medical literature and his frequent clinical trips back to Europe made him well aware. Dr. Ohage's operation, which was brilliantly successful, was performed at St. Joseph's Hospital on September 24, 1886, and was, incidentally, reported to the medical world at large in *THE NORTHWESTERN LANCET* for October, 1886. There was a great deal of doubt as to the feasibility of this operation before Dr. Ohage performed it. Little was then known of the diseases or the surgical treatment of the diseases of the gall bladder, and certain physicians warned Dr. Ohage that he might be indicted for manslaughter if his operation should fail. It suc-

ceeded, however, and its success marked another advance toward healing along the intrepid path of surgery. The next year, in 1887, Dr. Ohage was able to publish a long and important article on the surgical treatment of gall bladder diseases, in the course of which article, he defended the practice of antiseptic as well as aseptic surgery. Not more than six months ago 2,000 delegates to the Interstate Postgraduate Medical Association of North America paid tribute to Dr. Ohage for his splendid pioneer work in surgery.

It must not be inferred, however, that Dr. Ohage's surgical skill was not acknowledged in the early days. He was soon recognized as one of the foremost physicians and surgeons in the State. He had the honor of being elected president of the Ramsey County Medical Association for two successive terms, 1889 and 1890, and was also made president of the Minnesota State Medical Society in 1895. He was a charter member of the Minnesota Academy of Medicine. He was appointed clinical professor of surgery at the University of Minnesota in 1890 and did not relinquish this position till 1899. He further held the office of president of the State Board of Medical Examiners for several years. International honors came to him, too, and he was made a member of the Imperial Surgical Society of Berlin.

During the Spanish-American War he took a very active interest in the Red Cross and was elected president of the German-American Red Cross Society. For this service and his other important accomplishments in the field of medicine, the Emperor of Germany, in 1907, awarded him the Order of the Red Eagle, a medal of distinction.

Before this, however, Dr. Ohage had made an important decision to enter the field of public health. In 1899, at the height of his surgical career, he accepted a poorly paid appointment as Health Commissioner of the City of St. Paul, and immediately threw himself into his new and difficult duties which characteristic vigor. Many and violent political enemies rose up to oppose the measures that he was promoting for the sake of public health; but the adventurous spirit that could enter into an entirely new field, that of health administration, at an age when most men

are looking forward to retirement, was not to be beaten. His enemies were conquered. His own measures carried the day. Pure food laws were enforced. Birth and death certificates were filed according to an orderly system. Compulsory vaccination was adopted into the schools. City garbage was properly collected and efficiently disposed. Quarantine laws were strictly enforced. All milk sold in the city was made subject to inspection and many herds of tubercular cows were ordered killed. Public baths were instituted. In many of these measures, Dr. Ohage initiated much needed reforms, showing the proper road to public health to the civic administrations of other cities; and many newspaper clippings attest the interest with which public health projects in St. Paul were regarded by other communities. Finally, at the St. Louis World's Fair, in 1904, five years after Dr. Ohage had accepted the position of Health Commissioner, St. Paul was declared the healthiest city in the world, and Dr. Ohage was awarded a medal for having made it so.

Among the many projects which Dr. Ohage fostered until he resigned from the Health Commissionership, in 1917, there is one deserving of particular mention. That is the establishment of the public baths on Harriet Island. The baths were opened in May, 1900. They were centrally located in the city, and little did anyone then foresee that all of Minnesota's ten thousand lakes would soon be available by automobile. Not only did Dr. Ohage give of his time and energy to the direction of the opening and beautification of these public baths, but also he actually gave to the City of St. Paul the island on which they were situated. This generous gift was made despite the fact that Dr. Ohage had already had large offers for his centrally located fifty acres from several industrial firms. His whole-souled devotion to civic betterment was publicly acknowledged last year by his election to the American Civic Association, an organization of individuals distinguished for their civic service.

Dr. Ohage is now 81 years old. He lives with his daughters at his old home, 59 Irvine Park in St. Paul. It is Dr. Ohage's desire to remain in the active practice of medicine for fifty years. His father did it and he sees no reason why he should not do the same.



AN ANALYSIS OF 1347 CASES OF MALIGNANT TUMORS OF THE BREAST WITH SPECIAL REFERENCE TO MANAGEMENT AND END-RESULTS

By G. W. CRILE, M. D.

Cleveland Clinic

CLEVELAND, OHIO

The one important point to bear in mind in the consideration of any tumor of the breast is that it may be the starting point of a malignant growth. This is true whatever etiological factors may seem to have been involved in the formation of the tumor; whatever its site, whatever the age of the patient, whatever the family history may disclose. We shall have more to say regarding the potentialities of each of these factors; we mention them here only for the purpose of once again sounding the tocsin for though it has been sounded persistently by many writers on this subject, still the warning has not been sufficient, for a period of watchful waiting is allowed in too many cases of apparently benign growths with dire results to the patient.

AGE INCIDENCE: The greatest incidence of cancer of the breast is generally placed in the decade between 46 and 56 years. So often has this statement been made that there is danger of overlooking the fact that cancer of the breast may occur at any age. In our own series of cases the range has been from 20 to 87 years (Table 1). I know of no case in which cancer has occurred before the advent of puberty. That cancer of the breast, however, is not entirely dependent upon the changes in the breast due to its functional capacity is shown by the fact that it may occur in man. Wainwright has collected 418 such cases. In our series there have been 9 cases of cancer of the breast in man, four of sarcoma and one of Paget's disease.

In the report of the Metropolitan Life Insurance Company for the years 1911 to 1922 the following statement is made regarding the age incidence of cancer of the breast:

"Cancers of the breast are almost never seen in childhood and very rarely in adolescence. They begin to assume a little importance in the age group of 25 to 34 years. Between 35 and 45 a particularly sharp rise occurs. Among white females of this age group breast cancers become as important as those of the stomach and liver, and the death rate is exceeded by no form of cancer except growths of the genital organs. Among the colored women at these ages, deaths from breast cancers are more numerous even than those from gastric and hepatic growths, and again are exceeded only by those of the genital organs. At ages 45 to 54 the mortality of breast cancers still exceeds that for those

of the peritoneum, intestines and rectum, but is not so high as from malignant tumors of the stomach and liver and female genitals. From 45 years upward the rate continues to rise and reaches the maximum for both white and colored women at the highest age group. It is well after the menopause that the hazard from breast cancer becomes greatest."

HEREDITY: Since one in ten women after the age of 40 dies of cancer, it is clear that as far as chance is concerned, a cancer history is almost to be expected. Nevertheless, there are families in which the presence of cancer in two or more successive generations raises the question as to whether or not it is hereditary. In our series 257 cases or 28.9 per cent gave a positive history of the occurrence of cancer of the breast in other members of the family. In this connection it is of interest to cite a statement by Johnson and Lawrence:

"Among 500 consecutive cases of carcinoma of the breast treated in University College Hospital, there was a family history of malignant disease in 81, and in 37 of the 81 cases the disease was stated to have been in the breast. In one of this series of cases the patient's mother and her sister died from cancer of the breast and the father's sister from cancer of the mouth; of the patient's sisters two died from cancer, one of the stomach and one of the breast. If heredity plays any important part in the causation of the disease it might be expected that it would lead to its incidence before the average age. In this connection it may be stated that among the 500 cases of cancer of the breast referred to above, the average age at which the disease was first noticed was 49.62 years, whereas among the 81 cases in which any evidence of heredity could be traced, the average age was 48.74 years. The difference in this series of cases is so small as to be negligible but individual cases of carcinoma occurring at an unusually early age are sometimes met with, as in one of the families mentioned above, in which the probable effect of heredity can not be disregarded."

As a practical clinical matter, it is evident that the heredity factor in cancer, even if it exists, is not of much importance. Certainly the possibility of hereditary influence should never be even suggested to the daughter of a mother who has died from cancer of the breast.

TRAUMA: To what extent trauma predisposes to cancer is uncertain. Nevertheless, that a definite relation may exist between cancer of the breast and trauma is indicated by various published statistics such as those of Hoffman who

states that in one series of 314 cases of cancer of the breast trauma was considered as the probable etiological factor in 44 or 14 per cent. In our series there was a definite history of traumatism in only 195 cases or 14.5 per cent. A further suggestion as to the possible influence of traumatism is found in the fact that the most common location of a cancer of the breast is at the point of greatest strain from the weight of the breast. In our series the upper outer quadrant was the site of cancer in 275 cases or 20.4 per cent. One could well imagine the repeated physical injury to which tubules and acini may be subjected by being pressed upon or twisted by the weight of the breast. It would appear that even if there is no causative relation between cancer and *external* trauma of the breast there may be a definite relation between cancer and continual *internal* trauma.

In view of this possible relationship also, massage of the breast is contraindicated. Only the gentlest manipulations should be used, for once cancer has developed massage will promote its dissemination.

In our series 48 cases gave a history of massage of the breast.

LACTATION: Whether or not cancer of the breast bears any relation to lactation has been disputed. Hoffman states that in Ceylon "cancer of the breast is rare though native women suckle their children for a long time." In our series 576 patients had borne children and there is a positive history of lactation in 241 cases.

PRECANCEROUS LESIONS: The one important point to bear in mind in considering precancerous lesions of the breast is that almost any lesion of the breast may be transformed into a malignant growth though this occurs but rarely. Nevertheless there are certain lesions of the breast which may safely be exempted from the above generalization. There are simple cysts, lipomata, traumatic fat necrosis, hypertrophy, acute mastitis, mastitis neonatorum, mastitis adolescentium, echinococcus cysts, and syphilis.

Chronic mastitis deserves special consideration because of the diversity of opinion as to its cancerous potentialities. In general it is acknowledged that a lesion of this type may become malignant, especially if the lesion is unilateral. If the condition is present in both breasts malignant changes almost never develop.

DIAGNOSIS: Unless a precancerous condition has been present in the breast there are no demonstrable symptoms or signs of cancer in its earliest stages. Pain is practically never present in the earliest stages of the development of a cancer

anywhere. In the late stages, however, pain may become a distressing symptom.

As Bunts has stated, "axillary involvement, fixation of the tumor, bleeding from the nipple, retraction of the nipple, ulceration of the skin and cachexia are sometimes referred to as the *classical symptoms* of breast cancer. It would be better to discard this classification entirely, however, for if one waits for the development of these classical symptoms the last chance of surgical relief will have passed."

What about biopsy as a diagnostic measure? In our opinion it is never justified, for while it has not been clearly proven, it is highly probable that cutting into cancer tissue may disseminate the disease. If there is even a chance that this may occur biopsy is not justified. In addition, we have found that the scar tends to add further growth energy to a tissue in which an abnormal degree of such energy has already been manifested by the presence of a tumor. Thus it is safer always to remove the tumor in its entirety rather than to cut into it. If this cannot be done without the removal of the entire breast, then the entire breast should be removed. If the tumor is found to be malignant the radical operation may then be completed.

PROGNOSIS: The prognosis is affected by the stage of the growth, the extent of involvement, the age of the patient, her temperament and personality, the presence or absence of pregnancy and lactation, and the presence or absence of involvement of the axillary glands.

The younger the patient the less favorable the prognosis; the older the patient the more favorable the prognosis. In the eighties and nineties cancer makes slow headway and sometimes seems to grow old and feeble with the patient. Regardless of age, if a cancer is present in an individual with a vivacious, vivid personality, the prognosis is bad. The more nearly the patient resembles a smoked herring the better the prognosis. Cancer in a lactating breast usually develops rapidly and the outcome is usually fatal. As a tragic illustration of the last two points may be offered the case of a patient, with a vivid and vivacious personality, twenty years of age, who shortly before I saw her had given birth to her first baby. Her breasts were large and turgid. There was a small lump in the upper outer quadrant which was excised and found to be a cancer. A radical excision of the breast with the axillary glands did not even halt the downward course of the patient. The lungs rapidly became involved and death ensued within a few months.

TABLE I
AGE INCIDENCE OF MALIGNANT TUMORS OF THE BREAST
(Cleveland Clinic Series)

No. of Years	No. of Cases	Per Cent
21-30	18	1.6
31-40	154	13.6
41-50	351	31.
51-60	330	29.2
61-70	211	18.7
71-80	60	5.3
Above 80	7	0.6
No. of cases in which age was stated		1,131

When the axillary glands are involved, especially if many glands are involved, even though they be small, low resistance to the growth or a high degree of growth energy or both is indicated and the prognosis is correspondingly bad. On the other hand if but a single large axillary gland is involved, the prognosis is correspondingly better.

The general prognosis in patients who now present themselves to the surgeon as compared with the prognosis in former years is progressively better. This is the result of the extending propaganda for an immediate visit to the physician when any abnormality in the breast is noted. Patients are now reporting more promptly and the results of operation are correspondingly improved. (Table II.)

TABLE II
LENGTH OF TIME BETWEEN DISCOVERY OF TUMOR AND OPERATION

No. of cases in which data are available	
Under 1 month.....	124
1 to 6 months.....	377
6 months to 1 year.....	93
1 to 2 years.....	92
3 to 4 years.....	81
Over 5 years.....	10
	777

OPERATION: Once the diagnosis of a tumor in the breast is made, operation should not be delayed. As we have stated, if there is any doubt regarding the malignant character of the growth, it will be found in any considerable series of cases that more lives will be saved by the removal of the entire breast, the axillary dissection being deferred until the immediate report from the pathologist determines the necessity for it.

There is only one condition under which a local excision may be made with entire safety, that is in the case of a single simple retention cyst. It must never be forgotten that the development of carcinoma may be favored by scar tissue. A lump may be removed which is pronounced by the pathologist to be benign. Later, however, a

recurrence may develop in the scar and become malignant presumably as the result of irritation by the scar tissue.

Various incisions for radical operation have been advocated, the best known being those of Halsted, Jackson, Willy Meyer and Rodman. It makes little difference what plan is followed as long as full opportunity for the complete removal is provided with ready access to the axilla.

Halsted believed that the pectoral muscles should always be removed. There are many cases of early cancer, however, in which a sharp dissection of all the fascial planes and a complete axillary dissection removes all the lines of cancer extension, and in such cases cures are effected in as high a percentage as by the more mutilating excisions. Each surgeon will make this decision according to his actual experience.

The axillary dissection should be done in such a manner as to allow a clear view of all the glands for not a single axillary gland should be left behind.

The axillary glands are most completely removed by sharp dissection in order to avoid any chance of squeezing out contaminated lymph as might happen with blunt dissection. In our series recurrence in the chest wall or axilla is rare. (Table III.)

TABLE III
END RESULTS OF OPERATION FOR MALIGNANT TUMORS OF THE BREAST

Total number of cases	Carcinoma	All other malignant tumors
Cases available for end-result data	523	32
3-5 year survivals.....	284—54.3%	23
5-10 year survivals.....	196—37.4%	21
10 year survivals.....	83—15.8%	11

RADIATION: What is the role of radiation in carcinoma of the breast? Our radiotherapy department under Dr. U. V. Portmann and our surgical division are agreed on the following conclusions: Our experience testifies against the use of radiation before operation. A course of radiotherapy takes time—usually at least two weeks. Radiation, of itself alone, cannot entirely cure a carcinoma of the breast as securely as a complete surgical excision following preoperative radiation since some cells probably would not be destroyed by the radiation, and during those two weeks this residual carcinoma would be growing and extending.

As for postoperative radiation, Portmann, by an extensive statistical study of the comparative results of operations for cancer of the breast with postoperative and without postoperative radiation, has convinced us that (1) the average natural

TABLE IV
SUMMARY OF RESULTS OF TREATMENT OF CARCINOMA OF THE BREAST

Treatment	Total cases	Traced cases	Living 3-5 yrs.	Living 5-10 yrs.	Living more than 10 yrs.
Operation only	741	523	284—54.3%	196—37.5%	83—15.8%
Operation and Radiation.....	395	275	124—45.1%	72—26.2%	15— 5.4%
Radiation only	43	22	5—22.73%	3—13.6%	0

TABLE V
CANCER OF THE BREAST
(Cleveland Clinic Series)

Prior to 1924

Treatment	No. of cases	Living less than 3 yrs.	Living 3 to 5 yrs.	Living 5 or more yrs.
Surgery alone	345	39.1%	28.1%	23.1%
Post-operative X-ray	92	39.1%	26.0%	35.8%

TABLE VI
MALIGNANT TUMORS OF THE BREAST
(Cleveland Clinic Series)
Since 1924

Treatment	No. cases	Living or dead with recurrence in first post-operative year	Recurrences during 1 to 3 yr. period	Living without recurrence first year	Living 1 to 4 years. No recurrence
Surgery	50	12 24%	18 36%	20 40%	12 24%
Surgery plus X-ray.....	61	11 18%	13 21.3%	37 61%	18 29.5%

duration of life for a patient with carcinoma of the breast is three years; (2) as a result of radical operation about 38 per cent of the cases will be free from the disease for the natural duration of life and the average survivals for five years will amount to about 30 per cent; (3) intensive cross-fire postoperative radiation is harmful but as the result of repeated superficial doses at least ten per cent more patients may be expected to survive for five years than among non-radiated cases; (4) gratifying results may be obtained from radiation in some hopelessly advanced cases of carcinoma of the breast.

Portmann's comparative studies from series of cases in the Cleveland Clinic are given in the accompanying tables. (Tables IV, V, and VI.)

As Wainwright has demonstrated, a malignant growth usually involves the entire mammary area which may be infiltrated with multiple tiny malignant areas many of which seem to be entirely independent of the primary tumor. Such areas as these may well be reached by the postoperative radiation. Another important point in a well-planned attack by radiation is that early metastases below and above the clavicle, and in the chain of lymphatics leading down to the chest cavity, may be destroyed. The added security given by radiation may be achieved by arresting the advance of the disease beyond the scope of other methods of treatment. (Table VII.)

TABLE VII
SITES OF RECURRENCE AND METASTASIS IN CARCINOMA OF THE BREAST

1. RECURRENCE:		
Local	194	37.31%
Skin	15	2.88%
Chest Wall	18	3.46%
Axilla	61	11.73%
Supraclavicular	41	7.88%
Other Breast	65	12.50%
Other Axilla	17	3.27%
Other Supraclavicular	5	0.96%
2. DISTANT METASTASIS:		
Abdomen	14	2.69%
Abdominal Wall	2	0.38%
Bones	79	15.19%
Breast Bone	2	
Clavicle	4	
Femur	11	
Humerus	3	
Hip	9	
Leg	1	
Pelvis	14	
Ribs	6	
Scapula	2	
Shoulder	2	
Skull	4	
Spine	48	
Sternum	3	
Tibia	1	
Thorax	2	
Carcinomatosis	17	3.27%
Cerebrum	10	2.69%
Chest Wall	25	4.81%
Esophagus	1	0.19%

(Concluded on Page 122)

SOME PRINCIPLES UNDERLYING THE SUCCESSFUL TREATMENT OF SOME ANORECTAL DISEASES*

BY LOUIS J. HIRSCHMAN, M.D., F.A.C.S.

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To attempt to do justice to all of the underlying factors in the treatment of even those diseases of the anus and rectum most frequently encountered, would be impossible in a necessarily brief dissertation. The patient usually consults his physician either for the relief of suffering, or because of an apprehension caused by the appearance of some change in his normal condition. Those patients who consult the proctologist do so because of one of the two reasons just mentioned.

The first principle, therefore, underlying the treatment of any disease is the making of a correct diagnosis. One might argue that in the more common diseases affecting the anus and rectum, that the diagnosis is self-evident or that the patient feels quite competent to diagnose his own condition. Unfortunately it is often those misguided (not always ignorant) patients who have considered the diagnosis of their rectal condition "a case of piles," who have tried to remedy the condition by the purchase of nostrums, patent remedies, and various appliances advertised and sold to the public for the self-treatment of diseases of the rectum, who are the victims of more grave disorders.

The many tragic instances of patients treating themselves for hemorrhoids by the use of popularly advertised remedies, when a malignant growth was in its incipency, present themselves so frequently to the family practitioner, as well as to the specialist, that it is high time that a more careful study be made of this situation by one whose contact is not only the first, but by far the more vital and important, and that is the family physician.

The correct diagnosis of any disease of the anus, rectum or colon requires just as much diagnostic care and conscientiousness as does the diagnosis of any affection of the other organs of the body. This means not only careful history taking, but a conscientious and painstaking examination, not only of the parts which are apparently affected and cause the symptoms, but it should include a general physical survey of the patient as a whole.

Such an examination must include, in addition to the digital examination of the patient, an external inspection of the surrounding parts, and an internal inspection, using for this purpose cylindrical tubes of various sizes, known respectively according to length as the anoscope, proctoscope and sigmoidoscope. These instruments vary in length from one to sixteen inches, and are provided with proximal or distal electric lights, or are illuminated by some users by head mirrors with reflected light, or direct light from the electric spotlight, or direct illumination from some form of focusing electric headlight.

The digital examination is very important, because after external inspection this is the next step in the investigation of the condition of the patient's anus and rectum. Many a patient has left a physician because of an improper, clumsy or unnecessarily painful digital examination of the anus and rectum. A good routine practice is to insert a pledget of cotton soaked in a four per cent cocaine or a two per cent nupercaine solution into the anal canal, and this is allowed to remain for four or five minutes.

With the patient lying on either side, the gloved little finger is then inserted while the patient is asked to strain or bear down. The finger should be always supple, and never rigid. As the patient strains the sphincters will relax, and the finger slowly enters.

Considerable information can be secured by gently encircling the anal canal and the lower rectum with the little finger. If this does not cause much discomfort, the index finger can then be inserted and the condition of the entire rectal cavity can be ascertained. With the other hand on the patient's abdomen, a bimanual examination can be made which will give information as to the condition of the pelvic viscera and the condition of the perineum, bladder, seminal vesicles, and prostate as well.

The insertion of the little finger first is advisable, because the difference of circumference of the little finger as compared with the index finger is often sufficient to make what would otherwise be a distressing procedure, a very comfortable one. Too often a physician has been satisfied

*Presented before the Williamsburgh Medical Society at Brooklyn, N. Y., Nov. 10, 1930.

merely with a digital examination, and because he has not felt anything abnormal, has decided that there was no pathology present.

It may be interpolated at this time that it is very difficult in many cases even for an expert to actually feel an internal hemorrhoid of considerable size. It is therefore urged that the other methods of examination be used in addition to the digital examination.

In the determination of the presence, location, number, size, and ramifications of perianal or perirectal fistulas, the injection of bismuth paste through an external opening, and roentgenological examination, employing stereoscopic films, as well as manipulation of the parts under the fluoroscope, are essential procedures. Smears of anorectal discharges are often necessary for the bacteriological diagnosis of many diseases of the rectum and colon.

The second principle to be observed in the treatment of proctologic ailments is the selection of the proper therapy. While it is true that the great majority of diseases involving the anus and rectum are permanently cured only after a surgical procedure, a great many patients can be temporarily relieved by nonsurgical methods. Diseases such as pruritus ani, anal fissure, and rectal ulceration, moderate internal hemorrhoids, and prolapse can often be so relieved by local or non-operative measures, that the result is quite satisfactory, both to patient and physician. Physical, economic, emotional or other considerations may have more weight oftentimes in making this decision than the therapy which the physician feels the condition really demands. This is practically true in the treatment of internal hemorrhoids, where many times the patient is absolutely unable to abstain from his daily vocation, and must be treated without hospital confinement or detention from his business affairs.

It might be stated at this time, however, that there is no form of nonsurgical treatment of internal hemorrhoids that is a permanent cure. These treatments have to be repeated at certain intervals, and therefore cannot be classed as a cure, but often a very satisfactory temporary relief.

In the case of internal hemorrhoids, it cannot be denied that there are several methods of actually destroying them in a permanent manner without the employment of actual surgery. This destruction, however, is accomplished at the cost of deformity, due to stenosis caused by faulty or excessive cicatrization caused by fibrosis, and sometimes necrosis. This necrosis may be produced by the use of escharotics, electricity or the

actual cautery. Hemorrhoids removed by such methods are in the direct opposition to the next principle which should be observed.

This principle is that no operation should be performed for the removal of internal hemorrhoids, which contemplates the sacrifice of anything more than the actual pathology involved. Too many methods for the removal of hemorrhoids unnecessarily sacrifice the healthy mucosa or cutaneous covering of the hemorrhoid.

The hemorrhoid itself is a tumor composed mainly of diseased veins. Inasmuch as the removal and destruction of the bowel lining results in cicatricial contraction with deformity and distortion, such a procedure cannot be classed as good conservative surgery. On account of this unnecessary sacrifice of mucous membrane, any form of clamp is contraindicated because all of the tissue, whether healthy or diseased, which is included in the bite of the clamp must be entirely removed instrumentally or by the use of the cautery. It is very rare that a clamp can be put sufficiently well down to the base of the hemorrhoid to include all the pathology without catching up some of the sphincter fibers. A clamp operation therefore is necessarily a blind or improper operation. It is just as illogical to clamp and cut away the mucous membrane covering a vascular tumor, which we know as an internal hemorrhoid, as it would be to use the same technic and cut away the skin covering any vascular tumor of the arm or leg.

In the surgical removal of internal hemorrhoids, an important principle to be observed is the conservation of the blood supply, and the prevention of unnecessary operative hemorrhage. This can be accomplished by the placing of an absorbable catgut ligature around the nutrient vessels of each hemorrhoid, just above and before they enter the hemorrhoid. Each of the three hemorrhoidal arteries and veins is treated in this manner by tying the vessels before they are incised.

In exposing an internal hemorrhoid, an ellipse of mucous membrane just large enough to account for the excess mucous membrane covering is removed. These incisions, as well as others in the anorectal canal are made in a longitudinal direction or parallel to the long axis of the large bowel. The elliptical opening produced will expose the diseased vessels comprising the hemorrhoid. These can be then picked up with the thumb forceps and excised, and all varicose vessels down to the sphincter are removed, exposing the muscle in a manner not possible by the clamp or "blind operation." By visualizing the sphincter, one is able to avoid it, and not damage it. Sphinc-

teric conservation is another principle of anorectal surgery.

In passing, it might be stated that by the use of caudal or spinal anesthesia, it is never necessary to dilate the anal sphincters. They relax fully and allow any indicated surgical operation to be performed with ease. The force necessary to dilate the sphincter under the use of a general anesthetic, must be sufficient not only to relax the sphincters, but also to overcome the natural resistance of these muscles even when the patient is under the influence of a general anesthetic. In personal practice digital, manual or instrumental dilation of the sphincter muscles has never been found necessary.

Another principle to be observed in the surgery of this region is to abstain from the suturing of all wounds in the mucous membrane of this region wherever possible. In spite of our best efforts and advanced method of aseptic preparation, it is well known that it is impossible to secure a surgically sterile field. During the course of an operation the mucus which is constantly secreted comes in contact with the wound and bathes it with bacterially infected material. If one attempts to close a wound in this region by suture, this infective material is enclosed, drainage prevented, and suppuration is inevitable.

This brings us to another principle, that of drainage in anal surgery. Every wound made in the anorectal canal must be carried down through the anal aperture to the perianal skin, as in the removal of all external hemorrhoids, as well as of hypertrophied folds. All incisions must be made radial to the orifice and paralleling the radiating skin folds.

No cups or pockets must be left at the outer extremity of any of these incisions. Every skin wound must taper to a point, so that the edges will agglutinate and heal practically by first intention if made properly and not sutured. The purse-string action of the external sphincter and the corrugator cutis ani muscle will tend to draw the wound edges together, so that suturing while absolutely inadvisable, is seen to be also entirely unnecessary.

Another very important principle to be observed is the abstinence from that almost irresistible impulse to insert a tube, a pack or a tampon into the rectum after an operation. The surgeon is tempted to do this to control hemorrhage, to provide drainage, or to keep the rectum and its muscles "in extension" during part of the healing process.

If one is following the principle mentioned above, viz.: to ligate before cutting, any sort of

pack to control hemorrhage will be entirely unnecessary. If packing and tubes are inserted to provide drainage, this is only necessary if you cannot relax the sphincter under some sort of regional anesthesia, but the tube or pack acts as a foreign body and induces earlier peristalsis than is desired by either patient or physician.

Packing or tampons are employed by some surgeons to keep the rectal muscles "in extension." This is also unnecessary and undesirable for the reason just mentioned. One secures such perfect relaxation through the employment of sacral or spinal anesthesia, that the muscles relax to an extent unbelievable until it has been actually observed by the surgeon.

As soon as sensation returns to the parts, any material inserted into the rectum by the surgeon produces the same stimulus as a stool would do, and peristalsis with an unnecessary and inexcusable amount of pain and suffering is thus produced. This has been proven by the author and others, by the employment of rectal tampons or pneumatic dilatation of rubber bags inserted into the rectum, to induce peristalsis in the treatment of chronic atonic constipation.

If you wish to provide drainage and prevent agglutination of apposing raw surfaces, a strip of rubber dam or gutta-percha tissue not over one inch in width may be inserted into the anal canal, and will remain without the patient being conscious of its presence.

Another principle to be observed is the avoidance of prescribing any such drugs as opium, bismuth or salol, or any of the various astringent proprietary preparations on the market to "lock up the bowels." If there is any one thing the bowels will not do after a rectal operation, provided the peristalsis is not stimulated by the presence of foreign material, it is to move without assistance. As a matter of fact in personal practice it is the custom to administer large doses of mineral oil on the evening following the operation, and every evening thereafter, in order to facilitate the bowel movements when it is desirable to start the same.

When one realizes how many ounces of bismuth have been administered in the preparation of the astro-intestinal patient for an X-ray examination, one realizes then how futile it is to administer a few grains of this drug at frequent intervals to impede or prevent bowel movements.

The administering of mineral oil is of chief value as a lubricant to facilitate the passage of the stools. In this postoperative use, it does render their contact with raw surfaces less irritating. Best results, however, in the administration of

mineral oil are achieved by the employment of one large dose at bedtime. Only too frequently the oil is mistakenly taken before meals as well as at night. If an inert and indigestible oil is administered just before food is taken, it is quite certain that food particles will be coated with an impervious film of oil and digestion prevented. That this does occur is evidenced by the fact that so many patients object to mineral oil, because the digestion is disturbed, and they suffer from eructations of gas after they have taken the oil.

Interrogation of these patients reveals one fact,—that it is only when oil is administered before meals, that they are disturbed by the formation of gas. Patients who take oil at bedtime do not make this complaint.

In the surgical treatment of fistula, either anal or rectal, there are several important principles to be observed. In the first place the diagnosis should be made without ever inserting a hard or inflexible probe or director. Through our roentgenological studies we have learned that the straight or "goose quill" type of fistula is the exception rather than the rule. We know that most fistulas are either curved or tortuous, or that they consist of definite cavities, which communicate with both mucous and cutaneous surfaces by means of channels much narrower than the parent cavity.

Knowing this to be a fact, the insertion of a probe blindly into a fistulous opening results usually in the production of false or traumatic tracts. The surgeon who proceeds in this manner with a probe is traumatizing the patient and adding to his troubles. If a probe is deemed indispensable, only a soft annealed silver wire of the smallest caliber sufficient to enter the channel should be used.

Far better than a probe is the employment of bismuth paste injected in a fluid state into the external opening of the fistula. If more than one external opening is present the bismuth paste will emerge from the other external openings as well as from the internal ones. Through an anoscope the yellow bismuth paste can be seen at the point of location of the internal opening or openings. These will naturally be found at the site of one or more Morgagnian crypts. The majority of these crypts are in the posterior quadrants.

A paste is much better than a colored solution for diagnostic purposes, as the paste remains in situ and can be palpated as well as seen. Slight pressure on the paste-filled cavity will cause the paste to be seen as it emerges from any of the openings.

The stereoscopic radiographs of these fistulous tracts and cavities are made while the bismuth paste is in place. These films give a remarkably accurate picture of the size, location, direction, and relation of the fistulous tracts.

After a diagnosis has been made, the question of treatment naturally presents itself. The treatment of a fistula is of course governed by the type of fistula presenting itself. Incomplete or "blind" fistulas, or those which have but one opening are sometimes known as perianal or perirectal sinuses, depending on the point of origin. Those with but an external opening are known as external sinuses, and those with but an internal opening, as internal sinuses. Those channels with both internal and external openings are known as fistulas.

An external sinus requires merely the enlargement of the opening so as to convert it from a bottle-shaped cavity to an open draining wound. Others will heal after the injection of bismuth paste. Most of them, however, require incision or excision.

Inasmuch as a fistula is the second stage of the disease which originates as an abscess, the prophylactic or abortive treatment of fistula is the immediate recognition and complete drainage of the abscess.

Whenever this can be accomplished a fistula is prevented, providing that the starting point or focus of the infection is recognized and removed. As has been stated above, the vast majority of fistulas originate in infection of the perianal crypts. Those which follow the occurrence and infection of a thrombotic hemorrhoid are purely external in character.

The appearance of a definite area of swelling, accompanied by marked tenderness, pain, and usually temperature is sufficient indication of the presence of an abscess of this character.

An abscess should be punctured immediately on recognition, in order to relieve tension and prevent spontaneous rupture in an undesirable quarter. This puncture not only relieves tension, but by allowing the escape of a certain amount of pus relieves the patient's pain, as well as preventing further spread or extension of the suppurative process. The patient should be informed, however, that the puncture is merely a temporary relief measure, and that the abscess must be operated upon within the next day or so in order to secure complete removal and drainage. An abscess which has been merely punctured will usually degenerate into an external sinus or so-called "blind external fistula."

A cardinal principle of after-treatment in both abscesses and fistulas, is the avoidance of the use of gauze packing. I know that many of my auditors will raise their eyebrows and shrug their shoulders at many of the principles which I have enunciated at this time, and I imagine that most of them will do so with particular emphasis, when I protest against the packing or plugging of abscess cavities and fistulous channels with gauze. As experience has taught us, gauze not only irritates tissues, but it actually prevents rapid healing. It acts as a foreign body and produces a stimulus to the formation of an unnecessarily large amount of fibrous tissue produced in wound healing.

In fistula operations where it has been found necessary to sever the external sphincter muscle, packing keeps the muscle ends apart and causes an overproduction of fibrous tissue between the cut ends of the muscle and induces partial, if not complete incontinence. A plug of fibrous tissue prevents good muscle union. If all infected tissue is excised, all side channels removed, and bleeding vessels tied, clean raw wounds will remain where the abscess or fistulous cavities were removed.

In order to prevent agglutination of the skin or mucous surfaces, pieces of thin rubber dam or of gutta-percha tissue are inserted, to be removed in forty-eight hours. If no gauze has been packed against this tissue, it will be found that the cavities have decreased from fifty per cent to seventy-five per cent in size, and what seemed to be a deep wound has become a very shallow one. If all abscesses and fistulous wounds are saucerized by trimming back the overhanging edges of skin, the treatment of these wounds become practically that of surface wounds, and healing without distortion or deformity is the result.

When fistulous tracts undermine the sphincter muscle, a sure way to avoid incontinence is to incise the sphincter in two stages. At the time of operation incise one-half, using the upper half of the sphincter as a splint to the lower or severed portion, then encircle the remaining fibers with a loose loop of suture silk, which will be allowed to remain until the open half of the fistula is healed. The lower half, or that surrounded by the silk seton is removed at a later date, when anesthesia is produced by infiltrating the parts with a few drops of novocain solution. This technic insures fecal continence by not incising the entire sphincter at one time.

If several fistulous tracts are present and undermine the sphincter they all should be injected with bismuth paste, and a silk suture drawn

through each tract and loosely tied around the sphincter to remain as drains and signposts to identify the location of each tract. Only one tract undermining the sphincter is operated upon at each stage, and this is allowed to heal completely before another tract, preferably opposite this one is treated in the same manner.

By this method any number of fistulous tracts may be removed and the muscle severed in its entirety in several locations, without in any way interfering with the normal function. Fecal incontinence, therefore, is a condition which should never follow a properly performed operation. Provided there has been no destruction of the muscle tissue by the disease or by trauma before the patient comes under his physician's observation.

In dealing with conditions of the lower intestinal tract of a more grave character, such as stricture, obstruction, chronic ulcerative colitis, and carcinoma, as well as in the treatment of complicated fistula in ano, it may become necessary to temporarily give the colon physiologic rest. These conditions are of that grave class which threaten or endanger the well-being, if not the life of the individual. It thus becomes necessary in order to create as large a factor of safety as possible to obtain, temporarily at least, a sidetracking of the fecal current.

I refer to the procedure known as temporary colostomy as a means to this end, in order to secure a clean surgical field. Of course relatively speaking, as one must always do in connection with surgery of the large bowel or colon. It is necessary to completely inhibit the physiologic function of that portion of the organ, which is the site of the surgical procedure. Many times the difference between success and failure in the operative treatment of a fistula, which exists between the rectum and bladder, rectum and vagina, or rectum and urethra, can be accomplished only after complete physiologic rest of the bowel.

In cases of chronic ulcerative colitis, where the patient's health and strength is fast waning away, and the patient's daily loss of blood is much greater than his blood production, even when stimulated by all of the known therapeutic measures, temporary colostomy may be his saving grace. The immediate cessation of absorption caused by the passage of the stools over the ulcerated and denuded areas, as well as the relief from the traumatizing effect of the fecal matter on the raw bleeding surfaces will often turn the balance away from deterioration and towards the restoration of normal health.

When the entire colon is involved in the diseased process an enterostomy or ileocolostomy should be performed. In carcinoma of any portion of the colon, a temporary colostomy, which may be converted into a permanent one, is absolutely indicated in the vast majority of patients. If ileostomy or ileocolostomy is indicated the operation can be safely performed with a local, paravertebral or subarachnoid anesthesia. This important principle of physiologic rest is a vital one, and must be borne in mind in dealing with any ulcerative, infective, or deforming condition of the anus, rectum or colon.

In all diseased conditions of the anal canal in which pain, and particularly spasmodic pain, is an important factor, physiologic rest of the sphincters is an important consideration. This is particularly true when the patient is suffering from a fissure or an ulcer of the anal canal.

In former days we were taught the way to produce this physiologic rest was by manual or instrumental divulsion of the sphincter muscles under general anesthesia. This means tearing of the sphincter fibers. It is true that tearing the sphincter muscle puts the muscle at rest, but in a brutal and unsurgical manner. It is much more logical, comfortable, and surgical to put this muscle at rest with local or caudal anesthesia by a simple incision at right angles to the sphincter fibers. The injection of a two per cent novocain solution into the caudal canal or a one-half per cent solution posterior to the anal commissure so as to block the nerve supply of the sphincter, is sufficient to anesthetize and relax the sphincter fibers. When anesthesia is produced, which occurs in a very few minutes, an incision across the sphincter muscle through the bed of the fissure or ulcer, and excision of the sentinel pile will be sufficient to secure rest, and healing will immediately follow.

It is obviously impossible in a paper of this scope to particularize in much detail the prin-

ciples governing each type of operation. Suffice it to say, however, that practically all surgical procedures for the relief of all conditions most frequently encountered in this region will come under the heads of those already mentioned.

A few other principles governing the well-being and successful convalescence of patients who have undergone anorectal operations could be elaborated with profit. On account of the limitations of this paper we will have to be satisfied with the mere mention of them.

One factor which is conducive to early convalescence, not only from the psychological standpoint, but from the benefit of the posture and improvement of circulation, is to encourage patients to sit up, to walk and to defecate in a normal manner as soon as they are able to do so.

By a proper supervision of the patient's diet a soft, but formed daily stool should be encouraged. A normally shaped stool of normal consistency is nature's dilator.

If both patient and physician will resist the impulse to indulge in saline or other cathartics, which produce irritating and fluid stools, we shall not hear so much about painful defecation and post-operative stenosis.

The overindulgence in, and abuse of enemas, and particularly the use of soapsuds enemas is to be strongly deprecated.

The equalization of circulation, and the comfort which hot sitz-baths give, can best be described by the patients who themselves are inclined to overdo their indulgence in the sitz-bath tub.

When all is said and done, a minimum of manipulation and a realization of the fact that one is dealing with a patient who is suffering from a disease involving a part which must be kept functioning during his entire convalescence, will be the best guide to the permanence of the result and successful handling of the case.

THE MEDICAL SCHOOLS OF MINNESOTA

(Continued from Page 78)

cational field of the College of Homeopathic Medicine in the year 1909.

(4) The unfailing devotion and the team-playing spirit of the members of the faculty of the University School during the earlier years of its making.

In the latter half of its history the ammunition of money has given a large impetus to the

growth of the School. Two and a half million dollars by gift and endowment and one and a half million dollars by legislative appropriation, have carried the School far on the road to excellence in physical equipment. That excellence should serve to carry it far along the road to greatness in those human values which money, in and of itself, cannot buy.

CANCER OF THE CERVIX UTERI—ITS PROGNOSIS FOLLOWING OPERATION

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A consideration of surgery as properly applied to cancer of the cervix uteri involves two factors: first, a proper selection of patients for operation; and, second, an adequately performed operation by one experienced in this type of surgery.

SELECTION OF PATIENTS FOR OPERATION

What constitutes the borderline between operable and inoperable cancer of the cervix uteri is in a large measure a matter of individual interpretation. By operability is meant that the condition is such that, on the basis of experience, a permanent cure may reasonably be expected.

Extension of the cancer to the rectum, bladder or paracervical tissues, in our experience and the experience of numerous others, precludes the possibility of a permanent cure. If the cancer extends on to the vaginal wall to a point which makes it impossible to remove the growth and still leave a macroscopically normal margin of at least two centimeters, local recurrence will almost inevitably follow. Regional lymph gland involvement and ureteral obstruction originating in the cervical parametrium, in our experience, likewise prevent permanent cure by operation. Occasionally a patient with the first complication may live as long as eight to ten years before recurrence proves fatal.

Another factor of importance in helping us to determine whether a patient should be operated upon is the length of time she has had the neoplastic disease. The history of the duration of the symptoms of bleeding or abnormal vaginal discharge will help to determine this point, although obviously such a determination is crude and inaccurate. However, from the experience of Cullen's Clinic at the Johns Hopkins Hospital, it would seem that, in the epidermoid variety of cancer, a history of symptoms of more than eight months' duration is in itself generally sufficient to put the patient beyond the hope of cure from operation, no matter what the preoperative clinical findings have been. Unquestionably, there will occasionally be an exception, but it will probably be safer to accept this rather than most clinical generalizations.

It is essential to determine clinically before operation whether all of the foregoing contra-

indications to surgical intervention exist. It is possible by bimanual vaginal and rectal examinations, vaginal, rectal, and vesical visualization as well as pyelography, to determine all of the foregoing factors except two, namely, regional lymph gland and parametrial extension of the disease. It should be stated, too, that if the neoplasm has not actually involved the bladder mucosa, it is difficult to interpret accurately the bladder findings by means of the cystoscope.

If by any chance the patient is so emaciated that the exploring finger in the pelvis detects palpable and adherent iliac or obturator glands, then the local process is so well advanced that it is manifestly not wise to operate. Generally gland involvement cannot be determined before operation.

The clinical determination of involvement of the cervical parametrium, however, presents a most important and as yet rather insurmountable obstacle to the accurate clinical appraisal of the neoplastic dissemination. If the uterus is fixed and the vaginal vault and cardinal ligaments are densely hard, the inference of paracervical infiltration, in most cases is obviously correct. However, if the uterus presents questionable, if any fixation, slight induration of one or both lateral vaginal fornices, and moderate or slight, but nevertheless definite paracervical induration, what then is the correct interpretation? The answer is difficult and not forthcoming.

Tables I and II, however, show the experience of Cullen's Clinic on this particular item.

TABLE I
PERICERVICAL INDURATION AND ITS SIGNIFICANCE

	Cases
Patients operated upon	290
Number having induration (36.8 per cent of 290)	107
Induration indicated cancer extension in (58.8 per cent of 107)	63
Induration indicated no cancer extension in (28.9 per cent of 107)	31
Induration indicated questionable extension in (12.1 per cent of 107)	13

TABLE II
PERICERVICAL EXTENSION OF THE CANCER AND THE INCIDENCE OF PERICERVICAL INDURATION ACCOMPANYING IT

	Cases
Patients having histological extension of cancer.....	92

Patients presenting clinical pericervical induration (68.4 per cent)	63
Patients presenting no clinical pericervical induration (31.5 per cent)	29

From these figures the rough generalization is then possibly permissible, that broad ligament induration signifies paracervical carcinomatous extension, in about two-thirds of the patients who otherwise are considered good operable risks.

TECHNIQUE

The second factor of importance in the application of surgery to cancer of the cervix uteri is an adequately performed operation.

There is general agreement among gynecologists that an adequate operation for cancer of the cervix uteri involves *nothing less than a panhysterectomy*, with removal of the proximal one third to one half of the vagina, and a wide parametrial dissection, which is possible only after the ureters have been demonstrated and mobilized for their distal ten centimeters or more. Considerable difference of opinion exists as to regional gland extirpation. As a result three groups of operators exist, each using one of the following procedures:

1. Routine extirpation of iliac and obturator glands. This is the procedure originally advocated by Ries, in 1895.

2. Extirpation of regional lymph glands only when palpably enlarged. This is the procedure advocated by the late Ernst Wertheim.

3. Nonremoval of regional lymph glands. Most gynecologists who now operate for cancer in this location follow this method. Cullen is its outstanding exponent. He operates in all operable cases.

It is difficult to find a rational explanation for three such divergent points of view and practices. There is, however, excellent reason for two of the methods, namely, the first and third.

Regarding the routine extirpation of regional pelvic lymph glands, the altogether logical explanation is that this is the correct operative procedure in all cases of cancer in which the regional lymph nodes are accessible. Against this practice may be noted (1) the increased primary operative mortality; (2) the involvement of inaccessible lateral aortic glands in certain cases in which lymph node metastases exist; (3) the comparative inability to effect permanent cures in patients with lymph gland metastases. The experience at the Johns Hopkins Hospital reveals that none of the patients with lymph gland metastases was permanently cured. However, seven per cent of those with lymph gland metastases (as shown by

microscopic examination of extirpated glands) were free of recurrence at the end of five years.

On the basis of the foregoing, we feel that the operation fulfilling the minimal operative requirements previously given with nonremoval of the regional lymph glands has a rational basis for the surgical treatment of this disease.

A recent report (1926) by Victor Bonney (2) of London, is decidedly at variance with the experience at Johns Hopkins and other clinics, and it challenges attention. Bonney practices routine extirpation of the iliac and obturator lymph nodes as advocated by Ries. Among 130 patients who were operated upon 10 or more years ago, 50 showed lymph gland metastases. Of these, 11 (22 per cent of 50) are free of recurrence, and on the basis of this Bonney continues lymph gland extirpation.

Ries also still does this operation, and states that he has some patients who lived 20 years after an operation where regional lymph glands were removed that contained cancer as determined by microscopic examination.

Surgical anesthesia is an integral part of the operative technique for cancer, and it probably is not an exaggeration to say that in the last decade and a half, greater advancements have been made in the refinements of anesthesia than have been made in the fundamentals of surgical technique as employed in the foremost clinics. Particularly in America, the cradle of ether anesthesia, has advancement been made in the technique of inhalation narcosis. The correct employment of ethylene-carbon dioxide-oxygen mixture with minimal amounts of ether is destined, I am certain, to lower materially the primary mortality in radical operations for cancer of the cervix uteri.

The more recent employment of various barbituric acid derivatives, before operation, has also made gas anesthesia more satisfactory, while the postoperative use of carbon-dioxide-oxygen mixtures for postoperative rebreathing, will undoubtedly lessen the incidence of postoperative pneumonias not due to pulmonary infarction.

CRITERIA FOR PROGNOSIS

Two types of prognoses are often desired by patients and more particularly by the immediate family, viz.: (1) the outlook as to the patient's ability to withstand the immediate operative procedure; and (2) the possibility of an ultimate cure, provided, the patient survives operation.

The first query can be immediately answered. In correctly selected patients who are properly prepared for operation, an operative mortality of

not over five to six per cent should be anticipated. In comparatively early cases in which the disease is limited to the cervix, a mortality not over one to two per cent should occur. This may appear at variance with some of the figures reported in the literature. However, in numerous instances such figures represent operations performed on patients who presented local processes technically most questionably operable, while the patients themselves were poor operative risks.

The second request, to look into the future, cannot be met until the operation is over and the pathological specimen is subjected to adequate microscopic examination. An adequate examination entails the study of numerous celloidin or paraffin microsections obtained from blocks representing all the cervical parametrium, which is cut at right angles to the longitudinal axis of the cervix, the entire length and anteroposterior thickness of the vaginal cuff, cervix, and the corpus uteri, to a point well beyond its macroscopic involvement. The adnexa should also be sectioned.

A study of this tissue should determine the extent of the local neoplastic invasion, the variety of cancer (whether adenocarcinoma or epidermoid carcinoma), and, if an epidermoid cancer, the predominant type of cancer cell. With these data available a prognosis can be given as to the anticipation of an ultimate cure with a reasonable degree of accuracy. To lend meaning to such data it has been necessary to make a critical analysis of many pathological specimens, and finally to correlate the findings with carefully obtained and preserved case records.

On the basis of such a study (3, 4) it has been shown that cancer of the cervix uteri varies greatly in its malignancy. To recapitulate briefly, a study of the pathological material from 387 cases of cancer of the cervix uteri at the Johns Hopkins Hospital, revealed that aside from the adenocarcinomata, the epidermoid cancers could be divided into three large groups, each being designated according to the type of cancer cell predominating. There were, necessarily, various combinations of cell types encountered, but it was found that the predominant variety of cancer cell indicated the relative malignancy of the individual process.

As a working classification, then, we have (1) spinal cell cancer; (2) transitional cell cancer; and (3) spindle cell cancer.

To illustrate this distinct variation in malignancy of cancer of the cervix uteri, the relative frequency of so-called "five year cures" is given in Table III, wherein are also compared the results obtained at the Mayo Clinic as reported

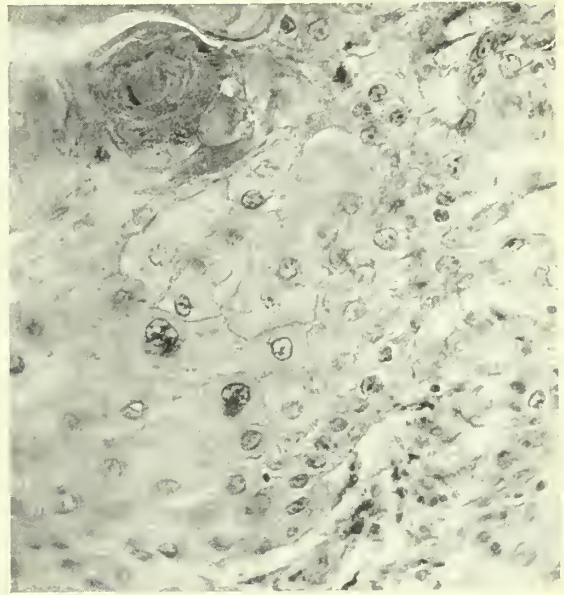


Figure No. 1

by Broders.*

The results as shown in Table III are so closely comparable as to stimulate skeptical speculation. However, it is worthy of consideration that the work in Rochester and in Baltimore was carried on independently and without knowledge on the part of either investigator that such work was in progress elsewhere.

TABLE III
PERCENTAGE INCIDENCE OF "FIVE YEAR CURES" FOR THE
DIFFERENT TYPES OF EPIDERMOID CANCER
OF THE CERVIX UTERI

	Johns Hopkins Hospital (Martzloff) Per cent	Mayo Clinic (Broders personal communication) Per cent
Spinal cell cancer—		
Grade 2 of Broders.....	47.00	53.33
Transitional cell cancer—		
Grade 3 of Broders.....	24.2	21.5
Fat spindle cell cancer—		
Grade 4 of Broders.....	9.5	9.52
Operative Prognosis—Cancer of Cervix (Martzloff) J. H. H. Bull. March, 1927		

* Personal communication.

Obviously any method designed to establish prognostic criteria possesses inherent limitations, that, with our present knowledge, are insurmountable, and we fully realize that any scheme for prognosis when applied to an individual case may prove untenable.

We have studied only patients suffering from unmistakable carcinoma of the cervix uteri, on whom panhysterectomies were performed that fulfilled the minimal operative requirements previously noted.

Briefly stated, in our experience, the factors that influence the chances of an operative cure in

a patient suffering with cancer of the cervix uteri, *provided she survives the immediate effects of the operation*, are as follows:

Extension and metastases when demonstrable in either the regional lymph nodes, the adnexa, bladder, rectum, or pericervical tissues, render impossible, in our experience, an ultimate operative cure.

Uterine extension of the cancer without extension elsewhere evidently impairs the chances of an operative cure, but by no means obviates it in spinal cell cancer. In the transitional cell type, extension to the corpus uteri apparently outrules any operative cure. No generalization on this phase is permissible in the adenocarcinomata or in the spindle cell cancers. It must be mentioned, however, that in the latter group the only cured patient had extension of the cancer to the body of the uterus.

Extension to the vagina of the neoplasm in patients who could otherwise be operated upon warrants a more unfavorable prognosis than uterine extension in the spinal cell cancers. Other factors being about equal, it might be said that the prognosis for an ultimate operative cure for vaginal extension as compared to uterine extension is as 1 is to 1.4. This complication is most serious in the transitional cell cancer and is least serious of all in the adenocarcinomata. No generalization is warranted for the spindle cell cancers.

Duration of symptoms before operation. It would appear justifiable on the basis of our study

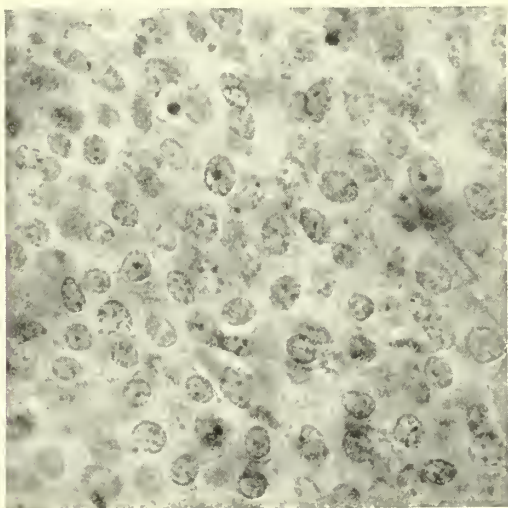


Figure No. 2

to say that in the spinal and transitional cell cancers, a duration of symptoms exceeding eight months is sufficient to put the patient beyond the

scope of an operative cure. In the case of the spindle cell cancers, our study would indicate that this time limit is probably too liberal. For the adenocarcinomata, no such stringent or arbitrary duration of symptoms can be predicated as for the cancers of the epidermoid variety.

The degree of cervical involvement provided there is no pericervical involvement appears to be a relatively unimportant factor in the spinal cell cancers as well as in the adenocarcinomata. In the case of the transitional cell cancers, however, the degree of radial cervical involvement immediately assumes an important rôle, so that of the cured patients those having one third or less of the thickness of the cervix involved in cancer as compared with those having more extensive involvement, are as two is to one.

In fact, patients with transitional cell cancer seen during the first eight months of their symptoms, who have only one third of the thickness of the cervix involved, present an operability incidence of 95 per cent, and the cures obtained in this operable group are 57.8 per cent. This is in distinct contrast to an operability incidence of 15 per cent and cure incidence of 17.6 per cent in the patients having two thirds of the cervix involved, or an operability incidence of 31 per cent with a cure incidence of 33.3 per cent if the entire cervical thickness is involved.

No generalization can be made for the spindle cell cancers.

Diagnostic curettage performed several days prior to the radical operation was done in ten patients with spinal cell cancer and 21.5 per cent of these are well today. Of the transitional cell cancer patients who are living and well, 38.8 per cent were curetted several days prior to operation. In the spindle cell cancer group, five patients were curetted. This includes the only patient in this group who is well today. Curettage was performed twice in the group of adenocarcinomata and one of these patients is well at the present time.

Undoubtedly, curettage for diagnosis several days prior to operation for radical extirpation does not render the prognosis hopeless.

Prognosis in operable patients. In the group of epidermoid cancers the spinal cell cancer offers the most favorable prospect for operative cure. Provided our criteria of operability are accepted, a cure may be anticipated in 63.6 per cent of the operable cases of spinal cell cancer who survive the operation.

The transitional cell cancer comes next, offering the possibility of a cure in 39 to 47 per cent

of its sufferers, while the spindle cell cancers are the least hopeful of all, in that only a 14 per cent cure is revealed in our study.

The adenocarcinomata offer the most hopeful outlook, in that 75 per cent of the operable cases may be considered cured. However, we must point out the small number of patients in this

group and the danger of accepting without qualifications deductions formulated on such premises.

Our experience is briefly summarized in table IV, and we should again like to emphasize that our tabulations are based on patients who survived the immediate effects of operation.

TABLE IV—SHOWING THE PROGNOSIS THAT MAY BE PREDICTED IN PATIENTS SURVIVING OPERATION WHEN CONSIDERATION IS GIVEN THE PREDOMINANT CELL TYPE AND THE FACTORS GOVERNING OPERABILITY IN CANCER OF THE CERVIX UTERI

Type of cancer	Number of cases	Histologically or chronologically beyond scope of permanent cure (inoperable)	Operable	Cured	Percentage of operable cases cured
Spinal cell	30	8	22	14.	63.6
Transitional cell	90	44	46	18 *(22)	39.1 *(47.8)
Spindle cell	17	10	7	1	14
Total for epidermoid cancers.....	137	62	75	33 (37)	44 (49.3)
Adenocarcinoma	9	5	4	3	75
Total	146	67	79	36 (40)	45.5 (50)

*To this number might well be added four other patients who were operable and died or were lost 7, 8 and in two instances 10 years after operation without evidence of recurrence. This would yield the results indicated by the figures in parentheses. (Martzloff, K. H.: Surg., Gyn., Obst., 1928, xlvii, 183.)

CONCLUSION

A postoperative prognosis in carcinoma of the cervix uteri can be made provided that the tissue removed at operation is studied with sufficient

care, and that an adequate operation is performed by a surgeon adequately trained in the surgery of the female pelvis. In these circumstances the prognosis may be rendered on as rational a basis as in cancer of the lip or breast.

Surgery has a definite place in properly selected cases for the treatment of cancer of the uterine cervix.

It is not the object of this paper to belittle the value of radiation therapy in the treatment of properly selected cases of cancer. The limited space at our disposal has permitted only a consideration of surgery. We would urge, however, that due consideration be given the factors presented when deciding what form of therapy to employ.

A study of Healy and Cutler's experience with radium in advanced cancer at the Memorial Hospital is given in table V. This will give some basis for comparison between surgery and radiology in the types of cancer we have discussed.

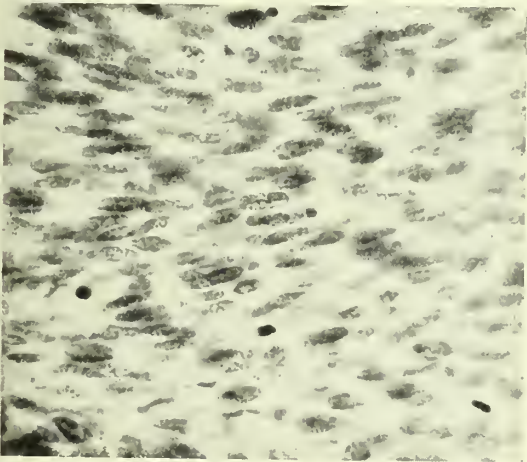


Figure No. 3

TABLE V—SHOWING RELATION BETWEEN PROGNOSIS AND STRUCTURAL TYPE IN ADVANCED CASES OF CARCINOMA OF THE CERVIX TREATED BY RADIATION

Cell Type	No. Cases	Cases Well	Per Cent Cured
Adult (spinal)	25	1	4
Plexiform (II) Transitional.....	102	15	14
Anaplastic (III) Spindle.....	33	14	42

(Healy and Cutler: Am. J. Obst. and Gynec. 1928, xvi. p. 21.)

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ABSCCESS OF LIVER COMPLICATING ACUTE APPENDICITIS WITH RECOVERY*

By R. C. WEBB, M.D.

MINNEAPOLIS, MINNESOTA

The history of this case follows: A schoolboy fifteen years of age. His father and mother and one sister are living and well. His past history is essentially negative. He has had measles, chicken pox, mumps and whooping cough. The present illness began at about two o'clock in the morning on Thursday, September 12, 1929. He had crampy abdominal pains but no vomiting. He went to school that day but remained home the next day which was Friday and he took only a fluid diet. Saturday, he was still ill and he was given a cathartic. After this he became more distressed and at six o'clock that evening Dr. E. J. Huenekens was called and found him suffering from a well advanced acute appendicitis with peritonitis. He was immediately sent to the Abbott Hospital where he was seen by me at seven P. M. His temperature was 100.2 degrees, pulse 112 and respirations normal. He left his room for the operating room at seven forty P. M. and was back in his room at eight forty P. M. At operation a McBurney incision was made, turbid fluid was found, with an attempt at a localized abscess about the appendix which was gangrenous and ruptured in its distal half. The appendix was removed and the stump inverted. A tubular rubber dam drain was placed down to the pelvis, and another similar drain was passed upward in the lateral gutter between the lateral wall and the ascending colon. A Gibson¹ rubber dam tampon was then inserted to close the wound. No sutures were placed in the wound at any point.

The postoperative course was very stormy. He was placed in the Fowler position in a single room with two special nurses. Fluid intake was kept above two thousand c.c. for each twelve hour period by proctoclysis and hypodermoclysis, and morphine was given regularly using the respiratory rate as a control of morphine dosage. During the first week the pulse ranged from

eighty to one hundred and twenty, and the temperature on the third day reached one hundred and three and eight tenths degrees, and on the sixth day one hundred and two and four tenths degrees. From the seventh to the eleventh day the temperature ranged about one hundred and the pulse about ninety. On the twelfth day he had a chill and the temperature rose to one hundred and four and five tenths, and the pulse to one hundred and twenty per minute. From that day to the twenty-first day he had an evening rise of temperature of from one hundred one to one hundred and two, with a rise to one hundred and three and eight tenth on the sixteenth day, and his pulse varied from ninety to one hundred and twenty. On the ninth day he complained of upper abdominal pains, and pain on breathing deeply was present in the right upper quadrant. The complaints in the right upper abdomen continued and there was tenderness in this region with gradually increasing severity. Roentgenograms of the chest and diaphragm were normal. The urine was normal on several occasions. There was no jaundice. The white blood count was taken and found increased but it was not helpful because of the draining lower abdominal wound. His condition was steadily growing worse. His bowels were freely open and his abdomen was soft throughout and had apparently recovered except in the right upper quadrant region.

The tenderness resembled that of an acutely inflamed gall bladder. A localized abscess in the peritoneal cavity in this region was also a possibility, and although jaundice was not present, liver abscesses were kept in mind.

An exploratory operation was decided upon, and on the twenty-first day under nitrous oxide anesthesia an upper right rectus incision was made, the peritoneum was opened, and the liver was found enlarged and extending below the lower edge of the incision. Adhesions were present at the edge of the liver and they were not interfered with. An area of the exposed liver about two inches in diameter seemed softer than the surrounding liver, was slightly bulg-

*Patient and case report presented before the Minneapolis Clinical Club, February 20, 1930.

1. The Gibson Rubber Dam Tampon in Acute Appendicitis. Webb, R. C., Minnesota Medicine, November, 1923. Pages 632-636.

ing and was speckled with yellowish spots of pinhead size. An aspirating needle was inserted into the center of this area for about one inch and pus was obtained. An artery forceps was passed alongside the needle and spread and this was followed by a finger which led into an abscess cavity the size of a walnut. The cavity was packed with gauze and penrose drain was placed on the liver surface and the wound was closed. There was very little bleeding. A smear and culture were made from the pus. The smear was reported as containing many pus cells and no organisms. The culture showed *B. Coli*.

The postoperative course from this time on showed steady, though very gradual improve-

ment, and on the fifty-ninth day he left the hospital with all wounds healed.

SUMMARY

This case illustrates the saying that when easy, the operative treatment of appendicitis is easy, and when difficult, it is very difficult.

The liver abscess in this instance was practically a single abscess and for that reason more than likely was caused by a single metastatic piece of infected material which broke into the blood stream and lodged in the liver and produced this abscess. It is difficult to conceive of a pyelphlebitis occurring and not producing multiple abscesses throughout the liver.

Multiple abscesses in the liver complicating

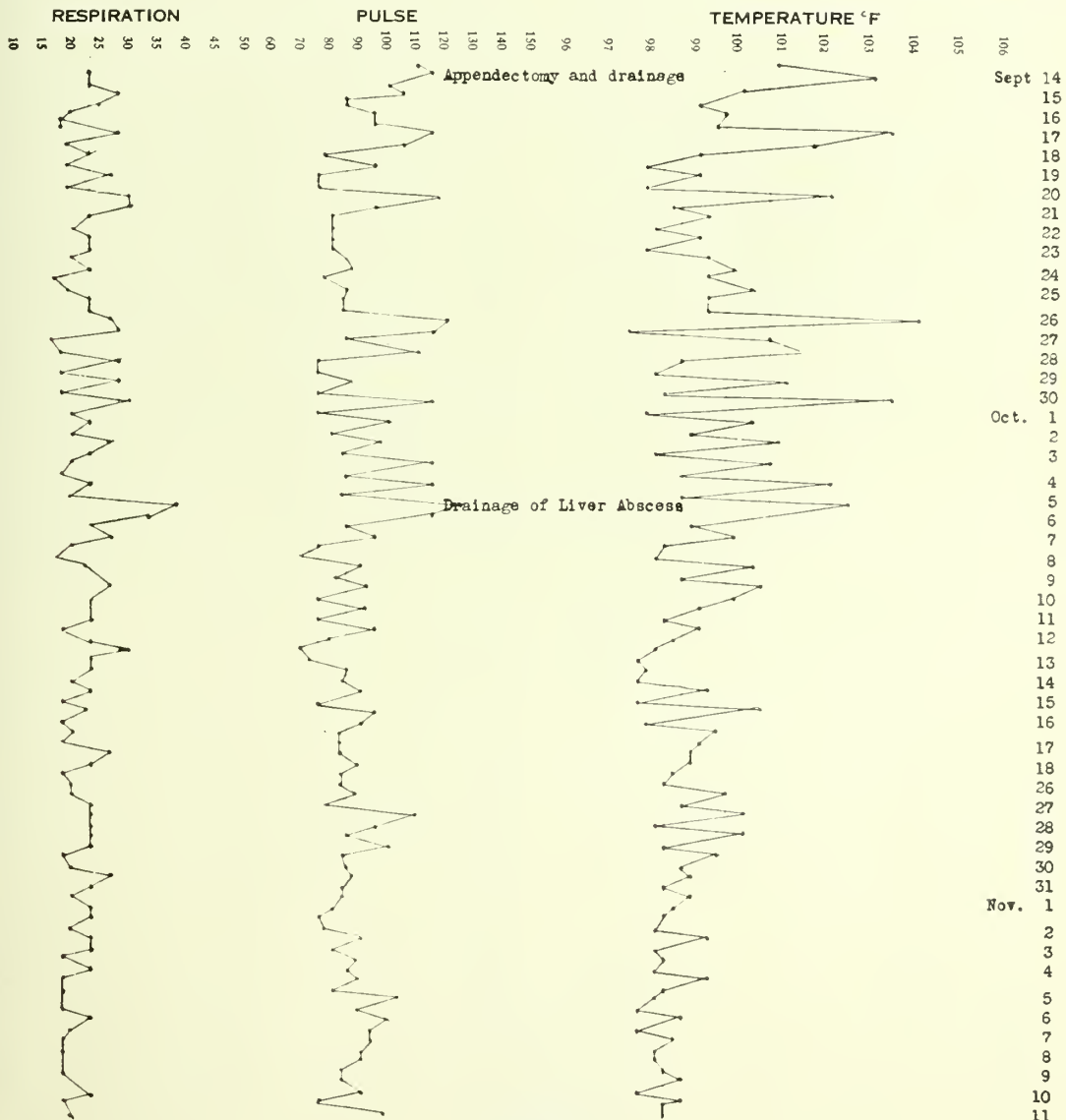


Figure 1
Condensed Chart

appendicitis are practically hopeless, but this case illustrates the fact that liver abscesses may be single and for that reason should be explored and treated surgically as early as possible.

DISCUSSION

DR. J. M. HAYES (Minneapolis): I recall Dr. Webb demonstrating the Gibson drain three or four years ago. I think it is an excellent drain. It holds back the intestines until they become fixed in place thereby preventing postoperative hernia. I used it several times with good results. Recently I have abandoned it for a very small drain in appendiceal abscesses. I use two small split rubber tubes and put on a large Oschner pack. This pack when properly applied gives the best results in these cases of anything I have ever seen. It keeps the wound wet and promotes drainage. Secretions drying around the drainage material are usually the cause of blocked drainage. Here we keep the wound saturated with an antiseptic solution and drainage readily takes place. It also prevents sloughing of the wound and promotes rapid closure.

Dr. Webb's case of liver abscess was very well handled and shows an excellent result. So often we get multiple abscess following appendiceal abscess. I wonder if the liver abscess is not the result of a direct extension.

Two or three years ago I opened one apparently about the same as this case of Dr. Webb. This case first had multiple abscesses in the peritoneal cavity before developing a liver abscess. I thought this may have been the result of an infection extending up along the colon, posterior to the liver with direct extension into the liver.

DR. A. A. ZIEROLD (Minneapolis): I believe we should not lose sight of the fact that Dr. Webb has presented a very unusual case. I don't know of anything more difficult to diagnose and identify than abscess of the liver; and nothing that requires as much courage to treat. I think Dr. Webb deserves a great deal of credit.

DR. H. M. N. WYNNE (Minneapolis): I first saw the Gibson drain ten years ago. I expected that delayed healing and hernia would follow its use in many cases. After seeing it used by Dr. Webb and using it myself, I became enthusiastic and so far I have no cause for regret. I have never seen any sloughs of the abdominal fascia and no hernia, although the latter does occur in a certain per cent of cases. It has been far more satisfactory in my hands than multiple cigarette drains. Patients are more comfortable, their wounds heal more quickly and more satisfactorily and they are able to leave the hospital sooner. It saves the surgeon time and worry. We not only use this drain in abscess cav-

ities, but in cases of general peritonitis with the addition of two Penrose drains, one to the pelvis and one to the lateral gutter. I remember especially one woman I operated upon for pelvic tumors which proved to be large solid carcinomas of the ovaries. The sigmoid was adherent to the mass on the left, carcinoma had invaded the sigmoid wall and the tumor was badly infected. It was necessary to make a permanent colostomy and remove the tumor with a large part of the sigmoid. I filled the pelvis with a large Gibson drain and isolated the two wounds by the use of rubber dam cemented to the skin. This large midline wound healed quickly.

In properly selected cases it is a boon to the surgeon and to the patient.

DR. O. J. CAMPBELL (Minneapolis): I believe we would all like to have, walking around, such testimonials to ability as Dr. Webb has here.

Dr. Peyton, at the University Hospital, had a similar case of liver abscess following appendectomy. Although he felt rather hopeless, he nevertheless operated through a similar rectus incision, found and drained a liver abscess with complete recovery. I think our conclusion from such cases must be that where other sources of infection can be ruled out the liver should be explored in an effort to find pus and to establish drainage. Probably more cases can be saved.

In regard to the tamponage treatment, I remember my first year at the University Hospital we treated all acute appendices in such a manner. We had the similar experience, that no hernias developed. After a while we abandoned that treatment and went back to multiple Penrose drains, for most cases. Probably after the first few hours the tampon does not give any more drainage than the penrose tubes. There are, however, where extensive peritoneal contamination has occurred, definite indications for the use of the tampon.

DR. WEBB: (closing): Dr. Howard Kelly's large volume on appendicitis has a very excellent illustration by Marx Broedel showing appendicitis with multiple abscesses in the liver. This drawing tells the complete story of appendicitis, pylephlebitis and multiple abscesses in the liver.

The rubber dam tampon has been freely discussed and I am pleased to note the familiarity of the various surgeons with Dr. Gibson's contribution. It is difficult to prove that it is a life-saver but I know that it prevents pain and suffering and I am sure that it reduces the fecal fistulas, post-operative hernias, and shortens the stay in the hospital in properly selected cases.

Dr. Gibson's associates have called it the Gibson tampon but he called it the rubber dam tampon modification of the Mikulicz gauze tampon.



ABNORMAL BLEEDING FROM THE FEMALE GENITAL TRACT

By H. M. N. WYNNE, M.D., F.A.C.S.

MINNEAPOLIS, MINN.

Hemorrhage from the genital tract is one of the most important symptoms in gynecological practice. Bleeding of such volume as to alarm the patient, her relatives and friends and not infrequently her physician, is common. However, the most frequent types of bleeding are not alarming so far as the actual blood loss is concerned, but act as danger signals for some of the most distressing conditions seen by the gynecologist. As in other branches of medicine and surgery, a general history and complete physical examination are essential, if embarrassing mistakes are to be avoided. A detailed gynecological history and a careful examination recorded in full, may be comforting to the physician at a later date.

The first essential point to be determined is the source of the bleeding. A cursory examination may reveal the offending organ but it is well to remember that more than one pathological lesion may be present, such as carcinoma in a myomatous uterus. On some occasions a woman will confuse blood from the urinary tract or from the rectum with vaginal bleeding. This is especially true when the bleeding is scant. We mention these possibilities in passing, and suggest that a catheter in the bladder and a finger in the rectum are just as important today as they were in the days of our preceptors from whom we have all heard this dictum.

TABLE I
LOCATION OF LESION

	Cases
Vulva	0
Hymen	2
Vagina	12
Cervix	31
Corpus	103
Tubes	35
Ovaries	13
Undetermined	67

While the most frequent causes of abnormal genital bleeding have their sources above the vagina, there are some rather common and some rare lesions of the external genitals and vagina which are to be considered. Bleeding from the vulva, has, in my experience been uncommon. Accidental wounds in young girls in the era of the picket fence were not rare, and the uncontrolled automobile has produced its quota among women.

I have seen one rather severe picket fence wound of the vulva of a seven year old girl, and one automobile victim whose urethra was torn from its anterior and left lateral attachments with laceration of the vulva and vagina and puncture of the bladder. I have also seen one woman bleeding from a varicose vein of the vulva. Vulval ulcers, malignant and nonmalignant were responsible for other cases of bleeding that I have seen from this region. Lesions of the urethra, the causes of which were visible on separating the labia minora, were due in two women to long polyps hanging downward from the urethra, and in another instance to an ulceration of a varicose vein in the prolapsed urethral mucous membrane.

Bridal bed trauma of the hymen may be the occasion of sufficient bleeding to alarm the bride and groom and may require a suture. A friend, who practices in the gateway of a popular vacation land in the East, has been called upon several times to treat such injuries and has noticed a seasonal variation, June being the month of greatest incidence.

The various inflammatory conditions of the vagina are responsible for some of the bloody discharges.

In women past the menopause, senile vaginitis may be the causative factor, where a few drops of bright red blood or a scant blood tinged discharge have been noticed. Other possibilities are vaginal ulcers and malignant growths, such as metastatic tumors from carcinoma of the uterus, chorio-epithelioma and hypernephroma, as well as extensions from cervical, rectal, and vesical malignancies which are more common than primary carcinoma or sarcoma of the vagina. I can remember seeing only one primary carcinoma of the vagina.

TABLE II
CAUSES OF BLEEDING

	Cases
Malignant Tumors	9
Benign Tumors	92
Inflammations	39
Pregnancies	42
Polypoid Endometrium	5
Retroversion	2
Hymenal Injury	2
Endometriosis	1

Extension of cervical cancer is by far the most frequent malignancy affecting the vagina. Bleeding from cervical lesions may be severe, but is usually of the scant intermenstrual type. Mucous polyps rarely bleed so profusely as to cause secondary anemia, although I have once seen the hemoglobin reduced to 62 per cent. Pedunculated ser- vical myomata ulcerate, eventually, and bleed more or less irregularly; in one instance the hemoglobin was 40 per cent. Ectropion and ero- sions, so-called, rarely bleed, though in two wo- men slight bleeding frequently followed coitus and in one followed douching. Decubitus ulcers of the prolapsed uterus frequently cause spot- ting. Ulcerating cancer of the cervix always causes some bleeding, rarely severe, until in the latter stages.

In considering bleeding from the uterine body, the history of a recent or suspected pregnancy is of utmost importance. Threatened abortions, retained membranes, hydatidiform mole, placental polyp, chorio-epithelioma, ectopic pregnancy, and pregnancy in one side of a double uterus are all possibilities. Hydatidiform mole and chorio- epithelioma are extremely rare. I have seen one hydatidiform mole and two instances of preg- nancy in one side of a double uterus. The greatest difficulty may be experienced in differentiating an early abortion from an ectopic pregnancy, without curettage. I always warn patients to save all clots or other material passed, for my examina- tion. Displacements of the uterus and especially retroversion, per se, must be considered judgmati- cally before advice is given the patient of the necessity of a suspension to cure her bleeding. It is best to replace the uterus and fit a pessary for proof. I have had little success in ending the complaint by this trial. However, in two cases the menorrhagia ceased following this procedure.

TABLE III	
TYPES OF BLEEDING (ABORTIONS ARE NOT INCLUDED)	
	Cases
Profuse Periods	35
Prolonged Periods	17
Profuse and Prolonged Periods.....	16
Periods every two weeks or less.....	6
Intermenstrual Bleeding, moderate	70
Intermenstrual Bleeding, severe	28
Bloody Discharge and Spotting.....	46
Bleeding after the menopause.....	17

Organic conditions of the uterine body not con- nected with a recent pregnancy, include myomata, adenomyomata, mucous polyps, malignant tumors and endometritis (especially tuberculous). In all of these conditions the bleeding may be intermen- strual, or of the profuse prolonged type or menor-

rhagia. In one carcinoma of the corpus, there were profuse menstrual periods but no intermen- strual bleeding. Fibrosis of the uterus, or myo- pathic uteri occur in women near the menopause and are diagnosed by exclusion.

Pelvic inflammatory disease often affects the frequency, amount of bleeding and duration of the periods.

Ovarian cysts sometimes stimulate the men- strual flow. An ovarian cyst was removed from a woman whose hemaglobin had been reduced to 60 per cent by the heavy flow and frequency of her periods during the preceding seven months, whereupon the periods returned to a normal flow at four week intervals and she rapidly recovered from her secondary anemia. Malignant tumors of the ovaries and tubes frequently cause abnor- mal uterine bleeding.

Dysfunction of the endocrine system, common at the beginning and end of reproductive life, is responsible for functional bleeding. Our meth- ods of diagnosis are not yet sufficiently accurate to establish, beyond a doubt, the exact part played by the ovary, pituitary, thyroid, thymus, and adrenal glands. Abnormal bleeding is more often found in the hypothyroid than in the hyperthyroid type of patient.

Constitutional diseases, such as the blood dys- crasias are often accompanied by genital hemor- rhage, which is controlled, if at all, by medical treatment and not by local gynecological manipu- lations.

Attention to focal infections of the tonsils and teeth will sometimes end a long period of abnor- mal flow. The discovery of a positive Wasser- mann reaction followed by active antiluetic treat- ment, may be the solution of an obstinate uterine bleeding.

TABLE IV	
AGES	
	Cases
16-20	8
20-30	68
30-40	89
40-50	61
50-60	24
60-70	8
75	1

I have summarized 252 consecutive cases from my private practice in which the complaint was of abnormal bleeding. This study includes cases of intermenstrual bleeding, of prolonged periods, nine days and over, of periods at intervals of two weeks or less, and of menorrhagia so profuse as to cause a secondary anemia.

The diagnoses recorded were either obvious on examination or proven at operation. In cases of

doubt, they have been listed as undetermined. The later include, also, cases where the pelvic examination did not reveal a lesion to account for the bleeding and the patient failed to return for further study. Those in which a diagnostic curettage did not show a definite lesion are also included with the undetermined diagnoses. Hyperplasia and hypertrophy of the endometrium are, likewise, placed in this category.

Endocrine disturbances probably account for many in this class, but I feel that our methods of diagnosis in such cases are not always accurate enough at present to be above suspicion. Many of these ceased to bleed abnormally after a diagnostic curettage.

There were three patients in whom lues was the only explanation of the bleeding.

Six patients presented themselves two or more times at intervals of a year or more with different lesions.

Ten patients had more than one lesion to account for their symptoms. There were myomata and polyps in six, myomata and ovarian cysts in two, myomata and chronic pelvic inflammation in one, ovarian cysts and chronic pelvic inflammatory disease in one.

Myomata caused the greatest percentage of secondary anemias; the hemoglobin in thirteen cases ranged from 14 per cent to 58 per cent.

TABLE V
LOCATIONS AND TYPES OF LESIONS

	Cases
Hymen	
Trauma	2
Vagina	
Decubitus ulcer	1
Pessary ulcer	1
Vaginitis senile	6
Vaginitis trichomonas	4
Cervix	
Carcinoma	2
Cervical erosion	4
Cervicitis, chronic	2
Cervicitis, acute (Neisserian).....	1
Pedunculated myoma	3
Polyps	21
Corpus	
Abortions	34
Carcinoma	5
Fibrosis	4
Hyperplasia of endometrium	3
Hypertrophy of endometrium	2

Membranous dysmenorrhea	1
Myomata	51
Pedunculated adenomyoma	1
Polypoid endometrium	5
Polyps of endometrium	4
Tubes	
Carcinoma	1
Salpingitis, tuberculous	3
Salpingitis, chronic	17
Salpingitis, subacute and acute.....	6
Tubal pregnancies	8
Ovaries	
Carcinoma	1
Cysts	11
Ruptured corpus luteum cyst.....	1
Endometriosis, ovarian implants	1
Adenomyoma of rectovaginal septum.....	1

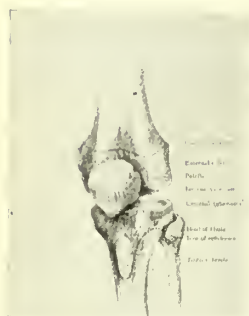
The 67 cases regarded as undetermined, included 26 in which no cause to account for the abnormal bleeding was found on one examination, and there was no further opportunity for study. There was one spontaneous recovery shortly after examination. In one case the onset of the symptoms occurred coincidentally with an upper respiratory tract infection, and ceased when this infection was cleared up. In three cases the only cause found to account for the bleeding was lues. In two patients the basal metabolism tests were subnormal and one had an adenoma of the thyroid. Once the bleeding was thought to be due to an ectropion of the cervix. One elderly patient with a hypertension (220 systolic) apparently bled from a small erosion of the cervix.

Diagnostic curettage was done in 35 instances. The pathological reports from the scrapings were (1) hyperplasia of the endometrium in 8 cases, (2) hypertrophy of the endometrium in 3 cases, (3) atrophic endometrium in 1 case, (4) no endometrium obtained in 1 case, and (5) normal endometrium in 22 cases. Of these 35 patients, 18 were relieved of symptoms, 4 were improved, 5 were unimproved, 5 were not seen at a great enough interval to determine the result, 2 were treated with x-ray shortly after curettage, and 1 stopped menstruating for nine months, then began to bleed irregularly and was lost sight of before any further diagnostic measures could be taken.



REPORT OF A CASE OF COMPLETE TRAUMATIC DISLOCATION OF THE KNEE-JOINT WITHOUT COMPOUNDING *

By A. F. LONGEWAY, C. M., M. D., F. A. C. S., and R. B. RICHARDSON, M. D.
GREAT FALLS, MONT.



In order to fully study this injury it is necessary to go over some of the more essential anatomical structures of the knee-joint. The knee-joint is in fact three joints, a joint between each condyle of the femur and the corresponding tuberosity of the tibia, separated more or less by the crucial liga-

ments, also one between the patella and femur.

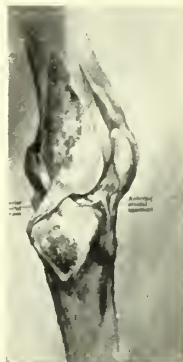
As is well known, the joint is supported by twelve (12) ligaments, which are reinforced by the tendons of the abductor and adductor, extensor and flexor tendons, passing over the articulations, which provide check and balance to the normal movement of the joint. The more important structures pertaining to this injury are the internal and external lateral and the anterior and posterior crucial ligaments, which will bear a brief description of their location and function.

The internal lateral ligament is a broad, flat membranous band situated nearer the back than the front of the joint. It extends from the adductor tubercle of the femur to the inner tuberosity and the inner surface of the shaft of the tibia to the extent of about two (2) inches.

It is vertical in its course. It is crossed at its lower part by the aponeurosis of the sartorius and the tendons of the gracilis and semitendinosus muscles.

The external lateral ligament is divided into a long and short external lateral ligament. The long is a strong, rounded fibrous cord situated nearer the back than the front of the joint. It is attached above to the outer tuberosity of the femur and

below to the outer part of the head of the fibula. The short external lateral ligament is an accessory bundle of fibers placed behind and parallel to the preceding.



The crucial ligaments are two interosseous ligaments of considerable strength, situated in the interior of the joint nearer to the posterior than the anterior part. They are strong, fibrous bands and have important influence on maintaining the proper position of the articulation in normal flexion or extension. They are crucial because they cross each other somewhat like the letter X, and are called anterior and

posterior crucial ligaments.

To eliminate confusion in our minds as to which is anterior and which is posterior, bear in mind that the dislocated bone is the distal bone and not the proximal one, and that the anterior crucial ligament is attached to the anterior articular surface of the tibia, and the posterior crucial is attached to the posterior part of the articular surface of the tibia.

The anterior crucial ligament extends from the depression just in front of the spine of the tibia (being blended with the anterior extremity of the external semilunar cartilage) and passes obliquely upward, backward and outward, to be inserted into the inner and back part of the outer condyle of the femur. Its function is to check the forward movement of the tibia upon the femur, which takes place during extension.

The posterior crucial ligament is stronger and shorter and less oblique in its direction. It extends from the back part of the depression behind the spine of the tibia and the popliteal notch and the posterior extremity of the external semilunar cartilage and passes upward, forward and inward, to be inserted into the outer and fore part of the inner condyle of the femur. Its function is to check the posterior displacement of the tibia upon flexion of the leg and is put on the stretch upon extreme flexion. Each crucial liga-



*Read before the Great Northern Railway Surgeons' Association at Grand Forks, on June 20, 1930.

ment acts as a direct bond of union between the tibia and femur; they also assist the lateral ligaments in preventing lateral bending of the joint.

The crucial ligaments are strong bands holding the bones in close apposition and preventing sliding backward or forward of the tibial articulation with the condyles of the femur upon flexion or extension.

The internal and external lateral ligaments are more to the posterior surface of the joint than anteriorly, they are well reinforced by the tendons passing over the articulation and supplying fibrous bands as reinforcement to the ligaments.

In looking at the anatomical construction of the knee-joint, it would appear as being one of the most insecure joints in the body. It is formed between the two longest bones of the human skeleton, bearing the entire weight of the body, half of the time in locomotion; the amount of leverage brought to bear is very considerable. The articular surfaces of the bones are illy adapted to each other and the range and variety of motion is very wide, flexion being controlled only by soft parts of the posterior leg and thigh coming in contact, which would tend to make the articulation very insecure, but nevertheless, due to the very powerful structures surrounding and entering into the construction of the joint and binding the bones together, the joint is one of the strongest in the body and traumatic dislocation of the knee-joint is a very rare occurrence. Undoubtedly the greatest power preventing dislocation of the knee joint is possessed by short, thick and strongly inserted crucial ligaments, as is evidenced by their location, structure and strength. And dislocation would almost always be caused by severe direct violence, but the case I am about to describe must have been brought about by at least partial indirect force.

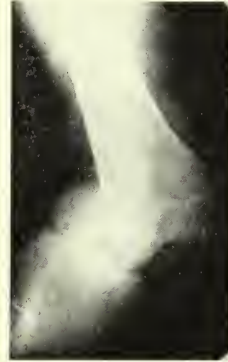
It would appear that any extensive dislocation of the knee must of necessity be accompanied by rupture of the crucial ligaments; they are short, fibrous bands and subject to very little stretching. It might be in place here to mention the various dislocations as described in anatomical textbooks. The various dislocations of the knee-joint, or more specifically the displacement of the tibia on the femur at the knee-joint are usually described as forward, backward, outward, inward and by rotation. Any of these dislocations may be and frequently are complicated by being compounded or by injury to the blood vessels or nerves.

Incomplete dislocation is not so uncommon, but complete dislocation is more rare. I have only seen two such cases in my practice, one unre-

ported, and the one I am about to describe, and they in point of time were forty-two years apart.

CASE REPORT

Wm. A. K., aged 68 years, weight about 180 pounds, freight handler, trucker, and checker in railway freight house for the past twelve years, previously a farmer. Past history negative except in 1920 he had an infected right hand; in 1929 he bruised his right shoulder, which left a slight stiffness of the shoulder.



January 28, 1930, while getting out of a freight car by side door, he put his right foot in stirrup and let left leg to ground; left foot slipped on ice and his right foot slipped through stirrup throwing full weight of body on right leg, below knee, causing complete outward and forward dislocation of the right tibia and fibula without compounding. He did not lose consciousness; four men picked him up, placing him in an automobile and taking him immediately to the hospital; pain was severe and shock considerable.

X-ray showed external condyle of femur resting on extreme edge of internal articular surface of tibia. Under gas anesthesia complete reduction was made by traction and slight flexion. One anterior posterior X-ray was made after reduction. The leg was put up in a plaster of Paris cast from high up on the thigh to just above the ankle, slightly flexed, bivalved, and elevated. Swelling only moderate, pain considerable, necessitating morphia occasionally; no compounding and some ecchymosis on inner thigh above the knee. After ten days, very slight passive motion begun with very little or no pain. The tenth or twelfth day we got about fifteen to twenty de-



grees of flexion, gradually increasing the motion with massage. After about fifteen days we left front half of cast off; at the end of three weeks we had about ninety degrees of flexion with slight pain; let him up and about on crutches bearing slight weight on injured leg. February 20 we let him go home, up walking with crutches and still retaining posterior plaster of Paris splint.

Adjusted a hinged splint with internal and external metal plates, hinged at knee, with a large cuff to thigh and calf of leg and supported by shoulder strap. After eight weeks could walk about on even floor without aid of crutches, but complained that the knee was liable to give way, as he had very little strength in support to keep it fully extended.

Knee slightly enlarged, not much tenderness, but complains severely of nocturnal pain, while quite free from pain during the day. Has fully ninety degrees flexion. Walking about streets, climbing stairs, with left foot always advancing.

About ten weeks after accident patient, walking with crutches, ninety degrees flexion and full extension, bones in good apposition, at which time he decided to visit friends in the East and to date have had no further report of his progress.

The rationale of the treatment might be open for criticism. The great importance of the crucial ligaments maintaining the stability of the joint together with their structure it would seem im-

possible to have the extent of displacement of the bones without rupture of these particular structures and it would seem important to do an open operation suturing lacerated tissues. At the time of reduction, you have no means of absolute knowledge of the extent of internal damage to the joint. Having obtained very good results by closed treatment, the seriousness and dangers of open operation have to be judged before decision is made. Several surgeons advise open operation repairing damaged ligaments, but I have not been able to get full details of the end results, as to whether they were better than these obtained when treatment is by the closed method.

Stabilization of joint, with early massage and mild, passive motion have given some fairly good results.

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Davis Applied Anatomy.

MALIGNANT TUMORS OF THE BREAST

(Continued from Page 102)

Eye	1	0.19%
Gall Bladder	1	0.19%
Glands (not including axillary and supraclavicular)	39	7.50%
Intestines	6	1.15%
Kidney	3	0.57%
Liver	34	6.53%
Lungs	97	18.65%
Mediastinum	15	2.88%
Multiple Metastasis	5	0.96%
Ovary	1	0.19%
Pelvis	2	0.38%
Stomach	9	1.73%
Scalp	1	0.19%

Total Cases with Recurrence and Metastasis..... 520

CAUSE OF DEATH: What is the usual cause of death after operation for carcinoma of the breast? If the radical operation has been performed and postoperative radiation has been employed, the usual cause of death is metastasis in the lungs, and less frequently though not uncommonly in the bony skeleton. When one remembers the rich lymphatic supply of the breast as well as of the tissue planes extending from it, the possibility of early and distant as well as near dissemination

becomes manifest.

STATISTICS: Our total series of cases of cancer of the breast includes 741 which have been treated by surgery only, 43 by radiation only, 395 by both surgery and radiation.

SUMMARY

1. In the presence of any tumor of the breast during the cancer age its surgical removal should be considered and with few exceptions it should be removed at the earliest possible moment after its discovery.

2. Removal of a tumor of the breast should include the entire breast tissue except in the case of a single retention cyst.

3. Because of the chance of disseminating malignant cells, biopsy should never be performed.

4. The type and extent of the excision should vary with the position and the extent of the cancer—experience and judgment are better guides than any single rule.

5. Postoperative radiation should be employed.

ANNOUNCING TWO NEW SERIES

Journal-Lancet is pleased to announce two new series of papers which we are sure will interest our readers. These series are by Dr. Leo G. Rigler, Roentgenologist at the University Hospital, University of Minnesota, and Dr. H. D. Lees, Assistant Professor of Preventive Medicine and Public Health, and Assistant Director of Student Health at the University of Minnesota.

Dr. Rigler's series of ten papers will be entitled "Roentgenology and Its Various Phases," while Dr. Lees' papers will be titled "Immunization Against Diphtheria," "Scarlet Fever," "Smallpox," "Poliomyelitis." These papers will appear in consecutive issues until the series is completed.

Below is a brief sketch of these men so that you may better know them.



DR. LEO G. RIGLER

Dr. Leo G. Rigler received his M. D. degree from the University of Minnesota in 1920. After being graduated from the University of Minnesota he was in general practice in North Dakota for about a year and a half.

Following this he took a post graduate course in internal medicine at the Minneapolis General Hospital and University of Minnesota. He then spent some time at the Battle Creek Sanitarium and the

University of Michigan in graduate work in X-ray. In addition, he has spent about a year in the study of Roentgenology at the Caroline Institute at Stockholm, Sweden and the University of Vienna. He was in charge of the X-ray department at the Minneapolis General Hospital from 1923 until 1926.

At the present time he is associated with the University of Minnesota as associate professor in charge of Roentgenology. Dr. Rigler is consulting Roentgenologist for the Minneapolis General Hospital, Minnesota State Sanitarium for Tuberculosis, Lymanhurst School for tuberculous children, Glen Lake Sanitarium, St. Andrews Hospital, and Eitel Hospital.

Dr. Rigler is a member of the American Medical Association, American Roentgen Ray Society, Radiological Society of North America, Minnesota Radiological Society, Minnesota State Medical Association and Hennepin County Medical Society.

We know you will find Dr. Rigler's papers very

Dr. H. D. Lees was graduated from the University of Toronto, Ontario, in 1910 with an M. D. degree. From there he went to North Dakota where he was in general practice from 1912 until 1923.

He left North Dakota to take charge of the Parkview Sanatorium for Tuberculosis in Minneapolis where he remained until 1924. At that time he went to the University of Minnesota in the capacity of Assistant Professor

of Preventive Medicine and Public Health, and Assistant Director of Student Health Service, in which capacity he still remains.

Dr. Lees is Associate in Tuberculosis on the staff of the Minneapolis General Hospital, and on the staff of the Lymanhurst Hospital. Dr. Lees is a member of the American Medical Association and the North Dakota State Medical Association.

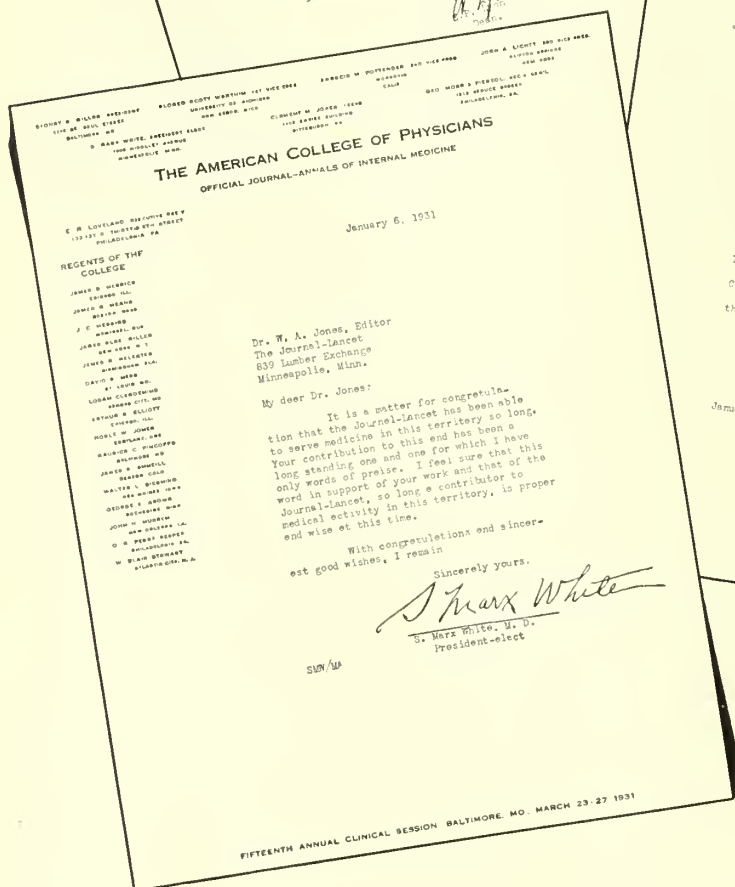
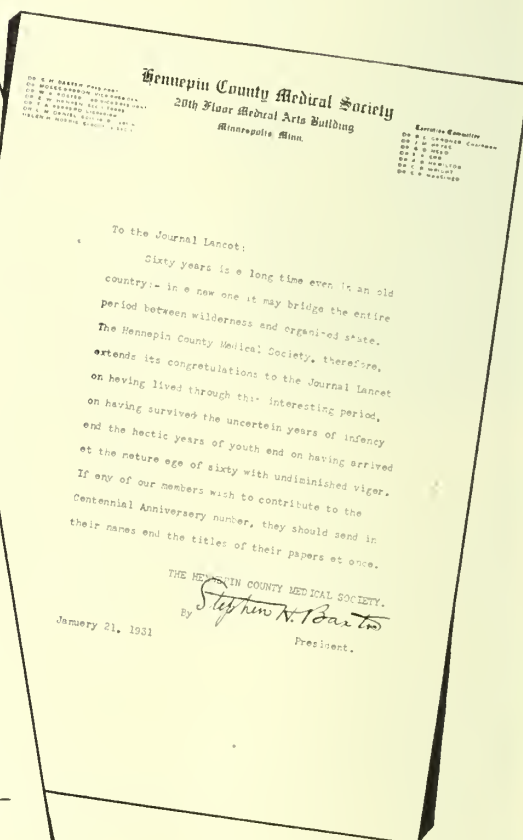
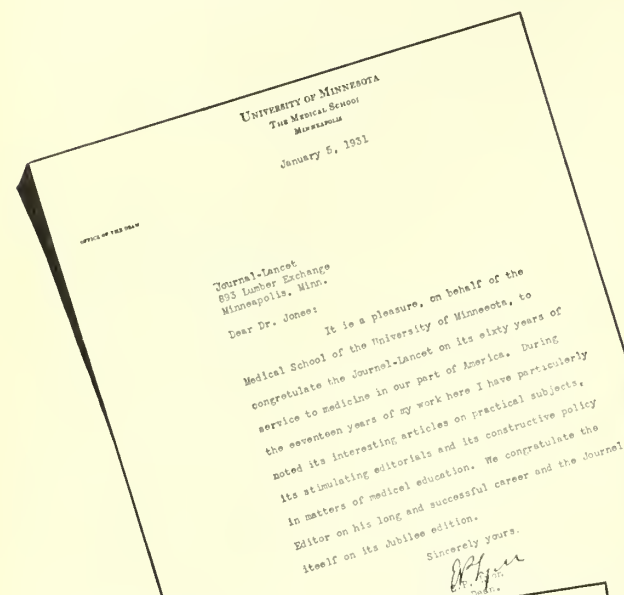
His papers are interestingly prepared and are full of very practical information for the physician. We are sure you will enjoy becoming acquainted with Dr. Lees through the medium of Journal-Lancet.



DR. H. D. LEES

complete and very clearly written. His style is pleasing and simple to understand. We believe that with this splendid background Dr. Rigler's papers will prove to be of inestimable value to the readers of Journal-Lancet, and we trust that you will enjoy them.

GREETINGS RECEIVED ON



OUR SIXTIETH ANNIVERSARY

DR. C. JEFF MILLER
DR. HILLIARD E. MILLER
MISERNA BUILDING-NEW ORLEANS

It is scarcely possible to over-estimate the debt which physicians owe to medical journals. To such publications is due in large measure the dissemination of medical knowledge, for while they do not take the place of texts, they precede them and they supplement them. The physician who does not read medical journals, and who does not read them widely and constantly cannot keep abreast of the times, and, because medical science does not stand still, he soon becomes an unsafe practitioner.

A journal which has existed for sixty years, which was founded as a pioneer adventure, which has kept pace with the growth of the medical profession in a great section of the country, can look back upon the past with pride, can look forward to the future with hope. To the Journal-Lancet in this, its sixtieth anniversary year, are due the congratulations and good wishes of the medical profession of America.

C. Jeff Miller
President, American College of Surgeons

L. SOGGE, M. D., PRESIDENT

Minnesota State Medical Association.
OFFICE OF THE PRESIDENT
L. SOGGE, M. D.
WINNOM, MINNESOTA

Jan. 19, 1930

The Minnesota State Medical Association take this means of sending our greetings to the Journal-Lancet and congratulating the personnel on their success in publishing such an excellent magazine. The value of the inspiration, as well as the medical knowledge that this Journal has given the practitioners in the Northwest, is hard to estimate, but we know that it has filled a want in the medical fraternity to a remarkable degree.

We also bow our heads in sorrow as we remember that great and noble physician, the late Doctor W.A. Jones, your former Editor, and wish that he could have lived to see the sixtieth birthday number to which he has given so much of his time and effort. With the most sincere greetings and wishing you continued success,

L. Sogge

L. Sogge

HILLIARD E. MILLER
PRESIDENT

American Medical Association
OFFICE OF THE PRESIDENT

1628 Eye Street, N. W., Washington, D. C.
January 7, 1931

Dr. W. A. Jones,
839 Lumber Exchange,
Minneapolis, Minn.
Dear Doctor Jones:

I learn with gratification and pleasure that on February 1st, 1931, the Journal-Lancet will celebrate its 60th birthday. Not only should the Minnesota profession take pride in the record and achievements of this Medical Periodical, but it should be a source of pride to the entire profession of our entire country. During all the long years of the existence of this Journal it has kept abreast at all times with medical progress and has stood ever for the highest ideal of the profession and of medical Journalism.

May I hope that the 60th birthday is but the entering of adult life for so valuable a contribution to medical publication. You have my best wishes for the immediate and more remote future success of the Journal-Lancet.

I am

With assurances of my high personal esteem,
Cordially yours,

William Perry Morgan

W. P. Morgan

HCM-20

NORTHWESTERN LANCET.

Semi-Monthly.

JAY OWENS, M. D., Editor and Publisher.

\$1.00 a Year.

Vol. 1.

SAINT PAUL, AUGUST 15, 1882.

No. 22.

Minnesota College Hospital, MINNEAPOLIS, MINNESOTA.

Session of 1882-3, commencing Oct. 2, 1882, ending last Friday in February, 1882.



This MEDICAL COLLEGE is inaugurated under the auspices of a union with the ST. PAUL MEDICAL COLLEGE, thereby securing the co-operation of this experienced corps of instructors, and the hospital advantages of MINNEAPOLIS and ST. PAUL combined.

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There will also be a preliminary examination for admission, unless the Applicant has had the benefit of a high school education, or its equivalent. Students can board in the college building with best accommodations.

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Prof. Orthopaedia.

Communications may be addressed to

F. A. DUNSMOOR, DEAN, No. 8 Washington Ave. S., Minneapolis, Minn.

Reprinted from Northwestern-Lancet of August 15, 1882.

On the Following Pages Are a Number of Very Interesting Editorials and News Items Which Have Appeared in the Early Issues of Journal-Lancet

SALUTATORY

*Reprinted From the First Issue of
Northwestern-Lancet*

In offering to the profession another medical journal, we feel that it is proper to give a reason for it.

We are aware that many of the journals recently established give evidence of a vigorous vitality, because they are the foci of the professional force of a large constituency of very active and aggressive men, who have the moral stamina necessary to constitute that independence of thought and freedom from the dicta of masters, so important a factor in establishing a true professional autonomy. We do not in any sense consider our journal as a rival to any journal, but rather as a helper to attain a much wished for end. New journals may possibly be established with a view of subserving some local interests, or personal aspirations, but on the whole, they seem to be necessary channels of thought through which may flow the personal observations and experiences of men actively engaged in the arduous duties of their calling, in localities, where, new forms of exciting causes, produce unusual forms or modify a general type of disease, so that the generally received authorities are no longer a safe and unerring guide to practice.

In looking over the field of medical journalism we find no journal to give voice to the work of the profession of the "new northwest," embracing Northern Iowa and Wisconsin and Nebraska, the State of Minnesota, and the territories Dakota, Wyoming, Montana, Idaho, Oregon and Washington—a territory equal in extent to one-half of the organized States, and rapidly peopling with the representatives of every nationality.

As the flora and faunae of this immense new empire differ from those of other latitudes and the soil embraces every variety of formation known to science, so must the causes of disease differ and produce new forms of disease, or modify old ones calling upon the professional to adapt himself to the existing order of things, and cut loose, so to speak, from the trammels of previously inculcated ideas, and time honored usages in therapeutics—A vast field of indigenous productions will require indefatigable investigation to discover and demonstrate their medicinal vir-

tues and add them to the professional armamentarium and it is with a desire to afford a medium of intercommunication between the members of the profession widely scattered over this vast area, where these observations and experiences may meet and crystallize, that we start our new journal.

Of course in time, and possibly a very short time, we will have other journals and it shall be our aim to welcome them, not as rivals, but as helpers, and only ask the confidence and co-operation of our brethren to make this the "pioneer journal" of "the new northwest" worthy of general reliance, and the source, of a common fund of associated observations, and to this end, we invite every physician to whom this initial copy of the LANCET, shall arrive, to constitute himself a correspondent, and send us any item of interest that may come under his observation in his special locality.

We have the assistance of quite a number of well-tried members of the profession throughout the "new northwest," who will contribute editorial matter to the columns of the LANCET, subject to the general supervision of the editor and publisher; and the editor will be responsible for the genuineness of the editorial contributions.

It is hoped, that in this way the editorial columns will present that many-sided comprehension of current discoveries and thoughts that should mark the cosmopolitan spirit of a journal that seeks to represent, and hold up to the age, a true mirror of passing events and progress. We represent no class nor clique, we have no friends to push, nor enemies to retard, but shall strive to advance the interests of our profession as a whole, and to this end we will endeavor to earn the respect and confidence of those who must be at once our judges and our patrons.

We have made our "bow," and respectfully and trustfully leave ourselves and our enterprise to the care of those whom we would fain serve, and with whom we hope to work.

THE PRICE OF KNOWLEDGE

The cry which is heard against the too frequent use of mechanical methods in the diagnosis of disease is familiar to all of us. The danger is constantly being pointed out that too great reliance

is being placed on mechanical means and that we are neglecting the use of the special senses which were the mainstay of our fathers in the study of disease.

Few of us would actually believe that as recent as 1900 the same cry was raised against the clinical thermometer.

The following editorial is from the *Lancet* of October, 1900:

The advances made in the different branches of medicines and surgery and the necessary larger education of the members of the profession cause naturally a greater demand by the public for more perfect services. This is, too, as it should be. The most noble of all professions should be in the van of progress and not the rear. Nor are we without evidence of the progress made in these sister sciences. But a few years ago none but specialists would think of doing a laparotomy or appendectomy; today almost any general practitioner abreast of the time is au fait at the operations. Only a short time has elapsed since the microscope was of any practical benefit; today the man who practices medicine and is not competent to use this instrument in the diagnosis of disease is practically a back number. This latter, however, more immediately affects the country practitioner for the reason that his city confrere can obtain the services readily of a microscopist and therefore does not need to spend his time to complete his diagnosis in this way. Then the Roentgen ray machine has added its perplexities as well as its benefits and so one easily sees how the price of knowledge is one not without considerable expense.

But are we not losing as well as gaining? Do not all these added accessories tend to lessen our ability to make clever, clinical diagnoses? Just as nature tends to do away with powers not absolutely necessary or but seldom used, so all these adjuncts will, if great care is not used, eliminate the special powers for clinical observation and diagnosis that distinguished our fathers. True, we make a diagnosis more quickly than they did, but are we as certain as were they, even with all our vaunted advantages? The clinical thermometer is today the standby for the determination of fever, but, after all, the pulse rate and quality is of infinite greater value than it, yet not nearly the value is placed on the latter which is its due, and consequently our prognosis is more likely to be faulty.

As a matter of fact, if every clinical thermometer were removed from students and they were

made to depend on the pulse rate and the state of the skin, we believe it would be better for them and their future patients. This, however, is one of the prices we are paying for knowledge, since we have not yet thoroughly learned how to discriminate, discarding too much those things that are proved in favor of the more "catchy" and quicker methods that knowledge has brought to the surface. In fact we are too prone to run after false gods. Let us, therefore, go carefully lest we pay too high a price for knowledge.

EDITORIAL ANNOUNCEMENT

Reprinted from December 15, 1900:

With this issue of the LANCET, my connection with journalism in the Northwest ceases.

The great favor which the LANCET has met at the hands of the profession at large, as evidenced by the frequency with which its articles have been copied in other journals, has been very gratifying, as evidencing the high standard of the profession of the Northwest, who have been, almost exclusively, its contributors.

The complimentary things which have been said concerning its editorial management have been peculiarly gratifying as convincing proof of my good judgment in choosing my associate editors, to whom alone is due the praise for the LANCET's success.

For the medical gentlemen who now assume the responsibilities of the LANCET, I would bespeak the same cordial support which the profession has freely given to me. That the editorial management of the LANCET is to be placed in the hands of Doctor W. A. Jones is sufficient guarantee that a high standard of ethical journalism will be maintained.

To the gratitude for the many favors which I have received from the profession and for the warm friendships which have accrued from my connection of nearly thirty years with the LANCET, I would add my sincere thanks for the generosity which has so kindly overlooked my many shortcomings.

ALEX. J. STONE.

MINNESOTA ACADEMY OF MEDICINE

R. O. BEARD, M.D., Secretary

Stated Meeting, October 4, 1890, at the Hotel Ryan, St. Paul; the President, Dr. Park Ritchie, in the Chair.

The annual election occurred and resulted in the choice of the following officers and committees: For president, Dr. George F. French, of Minneapolis; vice president, Dr. William Davis, of St. Paul; secretary and treasurer, Dr. R. O. Beard,

of Minneapolis; Executive Committee, Dr. A. E. Senkler, of St. Paul, and Drs. C. L. Wells and J. H. Dunn, of Minneapolis; Governing Board, Drs. W. A. Jones, J. W. Bell, and H. M. Bracken, of Minneapolis, and Drs. Arthur Sweeney and J. F. Fulton of St. Paul.

Dr. C. H. Mayo read a paper on Glandular Tuberculosis before the Department of Surgery of the Minnesota State Medical Society, June 19, 1890.

HEALTH REPORT—JANUARY, 1890

Membranous croup, 2; diphtheria, 7; erysipelas, 1; scarlet fever, 5; typhoid fever, 7; measles, 1; spasmodic croup, 3; inanition, 3; infantile marasmus, 3; phthisis, 11; infantile convulsions, 11; bronchitis, 12; congestion of lungs, 2; pleuritis, 2; pneumonia, 41; influenza, 1; puerperal fever, 1; peritonitis, 6; post partum hemorrhage, 1; total premature births, 6. Death rate for 1,000 per annum for the month, 9.61. Births, 257.

There were 57 cases of contagious diseases reported, consisting of 22 of diphtheria with 7 deaths, 2 of membranous croup with 2 deaths, and 33 of scarlet fever with 5 deaths.

MINNESOTA ACADEMY OF MEDICINE

R. O. BEARD, M.D., Secretary

Stated Meeting, May 3, 1890, at the Hotel Ryan, St. Paul; the President, Dr. Parks Ritchie, in the Chair.

At the business session of the Academy, Dr. H. B. Sweetser, of Minneapolis, was elected to active membership.

DAKOTA SOCIETY MEETING

The ninth annual meeting of the Dakota Medical Society will be held at Sioux Falls, South Dakota, June 12, 13, and 14, 1890. It will be proposed to change the name of the organization to "State Medical Society of South Dakota." A number of interesting papers will be read.

HEALTH REPORT, MINNEAPOLIS, AUGUST, 1890

Typhoid fever, 3; diphtheria, 16; measles, 3; whooping cough, 2; cerebro-spinal meningitis, 5; cholera infantum, 57 (breast fed 11, bottle fed 46); septicaemia, 2; phthisis, 16; marasmus, 6 (breast fed 2, bottle fed 4); pneumonia, 1; bronchitis, 4; gastro-eneritis, 58 (breast fed 9, bottle fed 38); peritonitis, 2; cholera morbus, 3; dysentery, 11; total, 286. Deaths by violence, 13; still births, 12; premature births, 7. Death rate for month, 1.43 per 1,000. There were 118 cases of

contagious and infectious diseases reported, consisting of 52 of diphtheria with 16 deaths, 18 of scarlet fever with no deaths, 39 of measles with 3 deaths, and 9 of typhoid fever with 3 deaths.

EARLY NEWS ITEMS

Dr. C. Eugene Riggs of St. Paul, late of Baltimore, Md., has accepted the chair of Nervous Diseases, in the Minnesota College Hospital.

Dr. A. J. Jones, of St. Paul, averages two operations for "lacerated cervix" each week. He is beginning to be known as "Mr. Lacerated."

Minnesota is rapidly moving into the front rank in Gynaecology, two recent successful operations for ovarian tumors will soon be reported in the columns of the LANCET.

Dr. Hollister, member of the Minnesota State Senate, has introduced a bill in that body to regulate the practice of medicine in the State of Minnesota.

The Minnesota College Hospital is one year old, and has the unparalleled record of seven ovariectomies and seven recoveries. This is the most excellent showing for both the operators and the sanitary condition of the Hospital.

Dr. Chas. A. Wheaton, of St. Paul, has been appointed Professor of Clinical Surgery in the Minnesota College Hospital. That Dr. Wheaton will fill his chair with credit to himself and profit to the students, who are so fortunate as to see him operate, is a foregone conclusion.

The faculty of the Medical Department of the Minnesota State University met and organized April 23rd. The President of the University is Ex-Officio President of the Medical Department and P. H. Millard was elected Secretary. This is not a teaching faculty but purely an examining, and the ambition of the gentlemen forming it is to raise the standard of the profession throughout the Northwest. They purpose conferring two degrees, that of Bachelor of Medicine and Doctor of Medicine.

The Common Council of the City of Minneapolis, recently refused the request of the Health officer of that city for sanitary inspectors. The people of Minneapolis have been so long accustomed to the phosphoretted hydrogen odor, which emanates from its thousands of cesspools, and privy vaults and to drinking diluted sewage, that they cannot tolerate any movement looking to an improved sanitary condition of the city. We commiserate Doctor Quinby at the futility of his efforts to obtain from the council any assistance in his attempt at sanitary reform.



DR. WILLIAM A. JONES
Editor of the
NORTHWESTERN LANCET AND THE JOURNAL-LANCET
1901 - 1931

DR. WILLIAM A. JONES 1859 - 1931

Dr. William A. Jones died at the Northwestern Hospital January 15, 1931, at the age of seventy-one years, of which forty-eight were spent in Minneapolis. He was a very active man and in the course of his long life had an important part in many activities. In addition to his private practice, he was for many years a teacher in the School of Medicine of the University; he was on the staff of various hospitals, including a heavy service at the Minneapolis City Hospital for years; he was for thirty years editor of the *JOURNAL-LANCET* and an active member of the State Board of Health for twelve years. In addition to these, he had time to cultivate an extensive acquaintance among medical men, to give many public addresses and to write many articles. If, as Osler put it, the principal centers of a medical life in a city are: The medical school, the hospital, the medical library, the medical society and the medical journal, then Dr. Jones was certainly prominent in every field of medical activity.

His parents were of Scotch and Welsh ancestry. Both his paternal and maternal grandfather served in the Revolutionary War. His father came to St. Peter in 1854 and his mother in 1858 and both suffered the privations of pioneer life and the horrors of the Indian outbreak of 1862. Dr. Jones was born in 1859.

He attended grade and high school in St. Peter and when only fourteen years old entered his father's drugstore as a clerk and there gained a thorough and practical knowledge of drugs. He later studied medicine at the University of the City of New York and was graduated in 1881 and directly afterward became assistant physician at the State Hospital for the Insane at St. Peter. In 1883, he came to Minneapolis and practiced general medicine until 1886 when, after his marriage to Annie R. Johnson of Denver, he went to Europe and took special work in nervous and mental diseases at Berlin and Vienna. On his return to Minneapolis, he began special practice and soon attained a prominent position in the field of nervous and mental diseases, which he retained to his death. In his lifetime he held many prominent positions, both local and national.

At different periods, he served on the staff of the Northwestern, the Minneapolis City, the Asbury, the St. Mary's, the Swedish and the Norwegian Hospitals. In 1913, he founded the South Side Sanitarium and maintained it as a private hospital almost to the time of his death.

He was a member of the Hennepin County and the Minnesota State Medical Societies and of the Minnesota Academy of Medicine and was president of all three. He was also a member of the American Psychiatric Association, and of the American Neurological Society and was a charter member of the Central Neuropsychiatric Association and of the Minnesota Neurological Society and was president of the latter. He was an active member of the American Medical Association, was Chief of the Section of Nervous and Mental Diseases in 1914, and in 1928-29 served as vice president of the Association.

By the very nature of his calling, a physician is more or less a public character. Throughout his professional life, Dr. Jones was deeply interested in the preservation of health and the prevention of disease. On January 1, 1906, he was appointed a member of the State Board of Health and served as such to December 31, 1918, being president from January 10, 1911, to December 31, 1918. During his term of service and in the course of some tempestuous activities, he was a loyal supporter of Dr. Bracken as secretary and particularly so during certain difficulties which arose in the legislative session in 1917 and which resulted in failure to reappoint Dr. Jones. The character of his work on the board is indicated by the statement of one of its officials that he was a masterful chairman and with his sense of humor, his absolutely frank attitude toward all questions and his prompt action, he was the most accomplished and the most efficient member the board ever had.

In 1890, he was appointed by Governor Nelson a member of the Board of Trustees of the State Hospitals for the Insane and held this position till 1894.

He was editor of the *Northwestern Lancet* and of the *Journal-Lancet* from 1901 to 1931 and no one who knew him could doubt his deep interest in and genuine affection for this publication. The *Journal* catered to the special medical activities and interests of a limited geographic area and Dr. Jones' editorials were its most striking feature. Many medical men have been heard to say that they subscribed to the *Journal-Lancet* for W. A.'s editorials. To most men, the preparation of a series of editorials every two weeks would be a real task. To Dr. Jones, it was a labor of love, quickly performed. Without a note at his command, the editorial was dictated as the ideas flowed from his mind and if it had any further

corrections, it was at the hands of the stenographer or the publisher. That he had the confidence of the medical profession in his undertaking is shown by the following list of contributors to the first number: Drs. Frank Allport, James H. Dunn, James E. Moore, H. L. Staples, R. O. Beard and A. T. Mann.

As a clinical teacher of neurology and psychiatry he was always a favorite among the students and out of a very ordinary patient he could always make an interesting case. Though never a profound clinical investigator, he could quickly see the outstanding clinical features of his case and his diagnosis, whether in clinic or in private practice, though often of the snapshot type, was generally correct. In 1889 he was made instructor in Nervous and Mental Diseases at the Medical School of the University, became professor in 1900 and served as such to his retirement in 1919. During the Great War he again took up the duties of a teacher in the Medical School, in the absence of the regular staff, and also served as a member of a medical advisory board during the war.

Dr. Jones had a large collection of books, both general and medical, and in the later years of his life in particular, when he was often confined to his room for short periods, the writer always found him with stacks of books about his bed. Throughout his life reading was his greatest hobby. His medical library he left to the Hennepin County Medical Society to which he had contributed liberally throughout his life.

As a practitioner in functional nervous and mental diseases, Dr. Jones was more than ordinarily successful. Possessed of a dominating personality, he impressed his ideas on patients to a very unusual degree and with his characteristic optimism and abounding vitality he inspired them with new courage and hope. Though brusque at times and very blunt, he was always forceful in his relations with patients who accepted his advice and followed his directions as best they could.

Always very fond of music, for many years he had in his own home a pipe organ which he played with much pleasure and he used to tell how he contributed to his scant income in the early period of his profession, through his musical ability.

All his life, he was a hard worker and he had few vacations—the last in 1921—and such as he had were purely urban. He cared nothing for fishing, hunting, camping or motoring, and his ideal vacation consisted in a trip to New York, where he spent his days in the top story of a hotel reading and his evenings at the theater. He had a high intelligence and a ready wit and repartee and was always popular at medical meetings where he often presided easily and ably. To the very last he carried with him his unquenchable courage and cheerfulness and his refusal to accept the role of an invalid.

He is survived by his wife and a sister, Mrs. J. W. Bell.

—A. S. H.

EDITORIALS

THE HISTORY OF THE JOURNAL-LANCET

The first appearance of medical journalism in Minnesota was in the year 1870, when Dr. Alex J. Stone issued the first number of a monthly journal, of twenty-four pages, called *THE NORTHWESTERN MEDICAL AND SURGICAL JOURNAL*. The name was appropriate, for Minnesota was at that time the farthest Northwest of any state in the union except on the Pacific coast. At that time, the State had a population of less than half a million, a railroad had but lately come through from Chicago, settlement was sparse, and communication difficult. Under Dr. Stone the *JOURNAL* continued on for two years, when it was taken over by Dr. H. C. Hand, of St. Paul, and Dr. H. H. Kimball, of Minneapolis, who carried it on until June, 1874, when it died of inanition, starved by a lack of subscribers and advertisements. Realizing how few must have been its subscribers, and looking over the scanty advertis-

ing, it is remarkable that it survived for four years.

THE NORTHWESTERN LANCET was the next medical journal to appear in Minnesota, making its bow on October 1, 1881. This was a semi-monthly publication, owned and edited by Dr. Jay Owens, of St. Paul, who turned over the editorship to Dr. C. B. Witherle, of St. Paul, in November, 1884. In September, 1886, *THE LANCET* was bought by Dr. Stone, who thus again entered the field of medical journalism, and it is because of Dr. Stone's ownership of these first two journals that *THE JOURNAL-LANCET* claims itself to be a successor of the original *NORTHWESTERN MEDICAL AND SURGICAL JOURNAL* and announces its sixtieth birthday.

To go on with the history. Dr. Stone almost at once turned over the active editorship of the *LANCET* to the associate editor, Dr. William

Davis, of St. Paul, who continued to serve in that capacity until the end of the year 1899, the publication of the journal having been handed over to Mr. W. L. Klein, of Minneapolis, in December, 1887, when the LANCET took on its present form.

During the year 1900, Dr. Howard Lankester, of St. Paul, succeeded Dr. Davis as associate editor, after which the LANCET was taken over by the present editor, Dr. W. A. Jones, of Minneapolis. In 1912, the title was changed from NORTHWESTERN LANCET to JOURNAL-LANCET, to combine the two names of the journal.

Ten years ago, at the completion of the fiftieth volume, the present writer described the place of the local medical journal, to which description there is little to add today, except to call attention to the fact that the LANCET covers a wider field than most local journals, because of its official connection with the Medical Societies of the States of North and South Dakota, and with the medical profession of Montana, a field whose territory is greater than that of many an independent country.

WILLIAM DAVIS, M. D.

EXTENSION COURSES IN JOURNAL-LANCET

Time was when little or no advancement was being made in our knowledge of medicine. The man or woman who graduated could practice medicine a lifetime without adding anything more than he had been taught in school. At the end of a lifetime, if he had kept his memory refreshed, he was up-to-date. Times have changed. So much has been learned in the past half century and so much is being contributed to our knowledge of medicine annually that it has become difficult for the physician to be up-to-date, even five years after graduation from medical school. The progress is so rapid that physicians must be on the look-out for new knowledge likely to be announced at any time. The practitioner of medicine frequently is so busy diagnosing and treating the ills of his patients that he has very little time to read literature in detail. Moreover, the medical literature has become so voluminous that no one person, even by devoting full time to it, can hope to read it all. Therefore, some attempt had to be made to bring to the practitioner of medicine, in summarized form, the new developments in the various fields of medicine.

In the JOURNAL-LANCET of April 15, 1930, was presented a detailed statement of what the General Extension Division of the University of Minnesota, in cooperation with the Minnesota

State Medical Association and the Medical School of the University of Minnesota, is attempting to do through short graduate courses in the various fields of medicine.



DR. RICHARD PRICE

Dr. Richard Price, Director of the General Extension Division of the University of Minnesota, has developed an extension department, which is serving thousands of people. He provides educational facilities for large numbers who would not be able to continue their education if it were not for his foresight. In this work he has been mindful of the needs of the medical profession and has devoted a tremendous

amount of time and thought to the best method of carrying to the physicians the latest information obtainable. In the earlier days he attempted to give short post-graduate courses on the Campus of the University of Minnesota. A great many busy practitioners found it impossible to be away from their work sufficiently long to take such courses. He then conceived the idea of carrying the courses to them, and out of this has developed the Colloquium short course. By this method the teachers are sent out to the local home centers of the various medical associations throughout the State of Minnesota. The local physicians choose the teachers whom they wish to present various subjects. It is gratifying to know that in the State of Minnesota all but four or five of the thirty-eight medical districts have in the past taken advantage of the instruction offered by the University in the several medical and surgical branches.

Working with Dr. Price, has been a capable committee of the Minnesota State Medical Association with Dr. N. O. Pearce as Chairman. Together with Dr. E. A. Meyerding, Secretary of the Minnesota State Medical Association, they have devoted a great amount of time to this work.

The courses offered have for the most part been very successful, and the attendance of physicians has been excellent. More and more of this kind of work must be done for the medical profession.

In addition to this, post-graduate courses can be conducted through medical journals.

In this issue of the JOURNAL-LANCET are two very significant announcements: one that Dr. Leo Rigler, Chief of the X-ray Department of the University of Minnesota, will offer a post-graduate course in the pages of the LANCET extending over several months. Dr. H. D. Lees of the University of Minnesota will offer a course in the LANCET on immunology. Each lecture of these two experts, therefore, will come to the desk of the physicians of whose medical societies the LANCET is the official organ and to the desk of all other subscribers. Following Dr. Rigler's series of lectures will appear monthly an X-ray clinic, discussing practical phases of X-ray work for the month. Further graduate courses will be published in the LANCET from time to time. By this method we feel that every subscriber to the LANCET will have an opportunity to read in brief summarized form the advancements which are being made in medicine. J. A. MYERS, M. D.

PUSH HERE

The typical collegiate tin Lizzie, with its disheveled fenders, shimmying wheels and asthmatic motor, has chalked or painted on its back or rearward panel a diagram showing where to place a pair of outspread helpful hands, and beneath this in bold letters, the legend, Push Here! ! It is to be noted that if complied with, the result is always progress, not movement toward the side or backward. One never saw the invitation spread across the radiator or on the side panels. The student and his Ford, if true collegians, honestly desire to move in the right direction. The desire of the student reflects itself in the college, the university, and indeed in all civilization. Those who desire to aid this progress must be careful to apply force so it will be effective in the proper direction, and with equal intelligence to withhold the push where its result would be retrogression or lost motion.

The decades covered by this journal have seen unprecedented growth in education, and a veritable revolution in medical education in this country. How far we have come is well illustrated by the University of Minnesota.

The study of Dean Raymond Walters, published in *School and Society* for December 13, 1930, including reports from 431 American colleges and universities up to November 1, 1930, gives the University of Minnesota a front rank in point of attendance. For full-time students, California (including the Universities at Berkeley and at Los Angeles) leads with 17,322. Columbia

and Illinois follow in order, and Minnesota is fourth, with 12,490. In grand totals, including part time and summer students, Columbia is first with 33,144, followed in order by New York University, College of the City of New York, and California, Minnesota achieving fifth place with a registration of 18,505. In liberal arts enrollment Minnesota stands third with 4,618, and likewise in medicine with 659 students, being exceeded here only by Northwestern with 740, and Pennsylvania with 663.

The life of THE JOURNAL-LANCET began almost contemporaneously with that of the Medical School of the University of Minnesota, and we may be pardoned for a glance backward, a look around and a suggestion. Our glance backward sees first a youthful medical school of a state university in a relatively young city and state. In forty years this youth has acquired and exercised leadership, and in this time has set certain standards of education and qualification which have become almost nationwide. The six-year course of study, with the required bachelor's degree preceding that in medicine, and the requirement of a year's internship in an approved hospital, are a few examples among many. Coördination of the forces of Medical Education with those of Public Health and of the State Board of Health, begun with profound foresight during the first half of the period by Frank Fairchild Westbrook, promised, and laid the foundation for, a most useful public relationship, both in education and in service. It is a matter for regret that the medical school has not seen fit, or has not been able, to follow up this opportunity in the broad and effective way planned by its great founder. Nevertheless, the latter half of the period has seen some progress in the foundation of the Department of Preventive Medicine and Public Health.

This school will long continue to be the greatest single factor in the progress of medical affairs in this territory. It must be the center for research, for investigation, for study of the factors causing disorder and disease. It must provide the most effective and best equipped hospitals in which all methods of treatment can be tried out, and many initiated. These studies must be done with proper controls, so that hasty and ill-founded judgments may be avoided, and so that people may be spared in so far as this is possible, unnecessary trials under the poorer controlled conditions of practice outside of hospitals. The medical profession must be kept informed of all the work going on. The Medical School and its faculty could be a center for coördination of the study and research normally carried on in every

well conducted hospital, clinic or group, or by any individual physician in the Twin Cities, and in fact throughout the State. It provides the only unifying, coöperative and stimulating center which could under any circumstances be made to function widely thus beyond its own walls. This is a large order, but since the University of Minnesota is a state institution, it is one to which the Regents, the President, the Dean of the Medical School and its faculty as well surely are alive.

To fulfill any such purpose, the Medical School requires men accomplished not only in research, but in teaching and in professional leadership as well. Such men it has had in the past. It has them now, and will continue to have them. The question is one of emphasis, of proportion.

If the rewards for research are to overshadow rewards for all other service, research will be over emphasized at the cost of teaching ability and leadership. If the latter are stressed too much, or the rewards for them overbalance, sterility in research and diminished contribution to progress may well develop, but must be prevented at all cost. Let it be said again, The Medical School must be a true university center.

To preserve the proper balance, the Medical School needs the constructive criticism and advice of medical men who know the needs through experience in the application of medical knowledge. To accomplish its highest purpose, the Medical School needs the support of every forward looking medical man in the territory it serves, in the State and among its alumni. That the regents and faculty desire this support is apparent. That

the medical profession and alumni can give and desire to give it freely has been proven again and again.

A special opportunity exists at this moment. The Legislature is being asked to provide the appropriation for a psychopathic unit of the University Hospitals. Such a unit will provide facilities for study and education in a much needed field, and will serve the people of the State in a manner for which no adequate provision is now made.

The service feature is probably the reason for the inability of the regents to include it in the ten year building program to be presented. The unprecedented growth and demands for higher education has forced them to place purely educational needs first. The regents would welcome this added educational and service feature if provided without replacing any feature in the ten year building program. The number of organizations and individuals throughout the State signifying their support is conclusive evidence of the need. Mention of the Psychiatric Hospital need is made only by way of illustration, and since this project is one for immediate action. The ten year building plan of the regents involves likewise the Medical School and deserves support.

Every alumnus anywhere, and every physician in Minnesota, can be of use in helping to see that the Medical School of the University of Minnesota is as well equipped, well staffed and well supported as the people of this territory require. There should be none better. Our suggestion is Push Here !

—S. MARX WHITE, M. D.

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NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. D. B. Williams, Yankton, S. D., has moved to Knoxville, Iowa.

Dr. E. D. Hunsaker, Camp Crook, S. D., has sold his practice and moved to Chicago.

Dr. M. G. Milan, St. Paul, Minn., has moved to Aberdeen, S. D., and opened offices for general practice.

Dr. A. A. Husser, Havre, Mont., 43 years of age, died recently in that city from a sudden attack of pneumonia.

Plans are being rapidly made for the early erection of the John Burns' Memorial Hospital at Belle Fourche, S. D.

Dr. C. B. Phillip, Missoula, Mont., has recently taken a post graduate course at the University of Minnesota.

Dr. G. W. Bohl, Minneapolis, has moved to Ada, Minn., where he has purchased the practice of the late Dr. W. B. Holmes.

Dr. G. F. Sjoden, formerly of Mora, Minn., is now located at Motley, Minn., where he has opened offices for general practice.

Dr. G. A. Landman, Scotland, S. D., will spend several months in New Orleans, taking some special work in a postgraduate school.

Dr. J. A. McIntyre, Owatonna, Minn., has been named as head of the health department of that city. He succeeds the late Dr. A. B. Hart.

Miss Eleanor Thompson, R. N., president of the American Nurses Association, was a guest of the Minneapolis Nurses Society this month.

Dr. J. R. Lenz, a 1929 graduate of the University of Minnesota Medical school has opened offices for general practice at Morton, Minn.

Dr. L. N. Serhus, formerly of Jersey City, N. J., is now located at Williston, N. D., being associated with Dr. L. B. Dochterman of that city.

Dr. H. H. Russ, Algona, Iowa, has moved to Blue Earth, Minn., and purchased the practice of his uncle, Dr. J. F. Russ, who recently died at Blue Earth.

Dr. B. T. Green, for the past thirty years a practicing physician at Brookings, S. D., died at

a St. Paul Hospital this month after he underwent an operation.

Dr. J. L. Tavenner, has purchased the equipment and medical library of the late Dr. F. A. Swartwood, at Waseca, Minn., and will continue the general office practice.

Dr. C. E. Spicer, who has been in practice at Valley City, N. D., for the past 15 years, has moved to Los Angeles, Calif., where he will open offices for general practice.

Dr. Elias P. Case, one of Minnesota's pioneer physicians at Waterville, Minn., died recently at Oakdale, Calif. He was 82 years old, but had visited his old home here last fall.

Dr. L. A. Fritsche, New Ulm, Minn., who has been seriously ill for several months, will spend the balance of the winter in California in the hopes of regaining his former good health.

Dr. W. A. Meierding, New Ulm, Minn., who has been associated with the Fritsche Clinic of that city for many years, has withdrawn from that clinic and opened offices for general practice.

The new St. Luke's Hospital at Thief River Falls, Minn., will be formally dedicated on February 7th with an elaborate program arranged for the opening. Dr. Edwards is chief of the hospital staff.

Dr. Sirah Groll, who has been in active practice in Minneapolis for the past 30 years, died recently at his home in this city. Dr. Groll was born in Germany, and received his medical education there.

Dr. J. A. Thabes, Brainerd, was elected president of the Minneapolis State Board of Health at the annual meeting recently held at St. Paul. Dr. A. J. Chesley, Minneapolis, was again re-elected secretary.

J. H. Kahler, Rochester, Minn., organizer of the hotel and hospital system of that city, died this month at the age of 67 years. Mr. Kahler was well known to all the leading medical men of the Northwest.

Dr. T. G. Thompson of Sioux Falls, was found dead in his offices recently from gas poisoning. He was an officer in the late World War and took an active part in the activities of the medical and legion work of South Dakota.

Dr. U. G. Williams, Minneapolis, a graduate of the University of Minnesota Medical School, died this month at the age of 65 years. Dr. Williams has always been active in political work and served as Hennepin County coroner for many years.

The annual meeting of Minnesota Academy of Medicine was held this month at the Town and Country Club, St. Paul. Dr. Emil S. Geist, retiring president of the club, presented a paper on "Recent Advances in the Pathology of the Spine—with Clinical Observations."

The need for a state psychopathic hospital, to be installed as a part of the medical unit of the University of Minnesota, was stressed by Dean E. P. Lyon of the college of medicine at the university at a meeting of the general education section of the College Women's Club, Minneapolis.

Dr. Charles Riggs Ball, St. Paul, University of Minnesota College of Medicine and Surgery, Minneapolis, 1894; at one time clinical instructor in nervous and mental diseases at his alma mater; served during the World War; aged 63; died, Dec. 19, 1930, in San Diego, Calif., of coronary sclerosis and influenza.

The Sioux Falls District Medical Society held its first meeting of the new year at Sioux Falls, the following program being presented: Dr. G. E. VanDemark, "Fractures of the Upper Extremities," Dr. A. E. Bostrum of the State Health Department, "Vital Statistics," and Dr. F. C. Nilsson, "The Absence of Lens."

The North Dakota State Board of Medical Examiners granted a license to the following physicians this month: Earl A. Franklin, Gilby; Stanley E. Patterson, Rhame; John A. Fowlie, Minot; Walter H. Gilsdorf, Dickinson; Haldor Barnes, Northwood, and Maurice J. McKenna, Enderlin. The license of Dr. C. I. Spannare, Fargo, convicted recently on a narcotics charge, was revoked.

Dr. E. L. Fitch, Minneapolis, has just completed a two story building at a cost of \$15,000 as a hospital for household pets, the only one in this section of the country. Dr. Fitch said in recent years much more interest had been given to the care of pets because of their close contact with human beings, and consequently hospitals for their care when injured or sick were being as carefully guarded as those for the human family.

Sioux Falls physicians will support a legislative bill designed to provide proper methods for enumerating vital statistics in the State. Dr. A. E. Bostrum of the State Health Department, who delivered an address on "Vital Statistics," said the federal government refused to accept statistics of birth, deaths and sickness in South Dakota because of the inadequate system now in use in the State. A bill to establish the methods

will be introduced at the present session of the legislature by the State Health Board.

Dr. J. H. Moore of Grand Forks was elected president of the Grand Forks District Medical Association at the annual dinner and business meeting recently held in that city. Other officers named were Dr. C. J. Glaspel, Grafton, vice-president; Dr. G. G. Thorgrimsen, secretary, and Dr. M. B. Ruud, treasurer. Dr. Glaspel, Dr. George Gertson and Dr. J. P. Miller were named delegates to the meeting to be held in Huron, S. D., in June. Talks were given by Dr. W. H. Witherstine and Dr. George Brigston.

Election of officers featured the meeting of the Mitchell, S. D. District Medical Society. The election resulted as follows: president, Dr. E. W. Jones, Mitchell; vice president, Dr. J. F. Malloy, Mitchell; secretary, Dr. F. D. Gillis, Mitchell; Drs. E. M. Young of Mitchell, R. A. Crawford of Chamberlain and W. J. Maytum of Alexandria were appointed censors. The program arranged for the meeting consisted of a symposium on "Spinal Anesthesia" given by Drs. J. F. Malloy, J. H. Lloyd, E. W. Jones, and F. D. Gillis.

Dr. Carl Fritsche, third son of Dr. and Mrs. L. A. Fritsche of New Elm, Minn., will take up his duties as a member of the Fritsche Clinic in which his father and brother, Dr. Albert, are affiliated. Dr. Fritsche is a graduate of the local high school after which he entered the University of Wisconsin to study medicine. He continued his work at the University of Minnesota and spent his last two years at Northwestern in Chicago, graduating there in June 1929. The same month he passed the Minnesota State Board examination and went to Europe with members of his family, visiting the world famous clinics. On his return he went to the Durant Contagious hospital in Chicago for some special work and remained there until January 1, 1930, when he started serving his internship at the Norwegian-American hospital in Chicago, staying there one year. Ted, the youngest son in the Fritsche family, is also a graduate in medicine, and is at present serving his internship at the Letterman Hospital in San Francisco. When he has completed his year's work it is probable that he will return to New Ulm to join other members of the family at the Clinic.

CLASSIFIED ADVERTISEMENTS

Wanted

Will pay half price for high frequency cutting machine (sometimes called Radio knife). Address 796, care of this office.

Laboratory Technician

Competent young lady with two years experience in x-ray, physio-therapy, laboratory and nursing. Would like position in Clinic, Hospital or Doctor's office. Good references. Address box 797, care of this office.

Location for Sale

Want to sell desirable, sound location and part of equipment. Located in North Minneapolis. Reason for selling, leaving city. Address box 798, care of this office.

Technician

Young lady technician wishes position in Hospital or Doctor's office, Twin Cities preferred. Experienced in x-ray, physio-therapy and all clinical laboratory procedures. Good references. Address box 799, care of this office.

For Rent

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THE WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION

BY JOHN E. ANDERSON, PH.D.

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MINNEAPOLIS, MINNESOTA

In Washington, D. C., from November 19 to 22, on invitation of President Hoover, a White House Conference on Child Health and Protection was held. At this Conference there were present delegates and representatives from the scientific and practical fields concerned with the care, training or welfare of children. The Conference represented the climax of efforts which were begun over a year previously, in order to bring together in a systematic and comprehensive form our knowledge of the present status of children in the United States. In the words of the President the original purpose of the Conference was: "To make a survey of our children, study the forces influencing them, and to try to chart out the wisest course possible in our future management of youth."

This purpose was accomplished through the organization of a large number of committees composed of experts and of practical workers under each of the four main sections of the Conference; (I) medical service for children; (II) public health service and administration; (III) education and training; and (IV) the handicapped, prevention, maintenance, and protection. Under the four sections there were seventeen com-

mittees and over a hundred subcommittees, through which the specific fields relating to the child were surveyed. The members of committees and subcommittees totaled twelve hundred and the number of delegates present at the final Conference was over three thousand.

Much of the time of the Conference was spent in the consideration of the reports and recommendations made by the various committees and sections, which were available in a printed preliminary volume. An idea of the scope of the work undertaken can be gained from the fact that the preliminary volume, although presenting only summaries of reports, contained some seven hundred printed pages. The more detailed reports of each of the several committees and sections will be printed in a series of volumes to be issued from time to time in the near future. In the *United States Daily* for November 28, 1930, covering fifty-five three column newspaper pages, there appeared a complete stenographic report of the proceedings of the Conference. The extent and amount of material collected and made available to the Conference should be particularly emphasized. Because of its size and comprehensiveness, no short article such as this can ade-

quately represent the results. Particularly must the medical or technical person interested in the work of the White House Conference look to the detailed reports for the information and help which there lies ready for him.

The Conference chairman was Ray Lyman Wilbur, M.D., Secretary of the Interior, and the Conference director was H. E. Barnard, Ph.D. The opening address was given by President Hoover. During the Conference addresses were also given by Secretary Wilbur and by Secretary Davis.

Although medical men took an active part in all phases of the Conference, their chief interest was centered in Sections I and II of which a brief description may be given. Section I, on medical service, under the chairmanship of Dr. Samuel McIlamill, consisted of three main committees, of which the first under the direction of Dr. Kenneth Blackfan dealt with the growth and the development of the child. Through the coöperation of scientific men all over the United States, this committee prepared a summary of the present status of our knowledge of physical and mental development. In so doing, distinction was made between the facts which have been abundantly confirmed by many investigators, those which are generally accepted as interpretations, and those which fall outside these criteria. The report of this committee presents a conservative summary of our present scientific knowledge.

The second committee, on medical care for children, under the direction of Dr. Philip Van Ingen, made a number of studies of which the first was concerned with the qualifications of all groups concerned with the cure or prevention of disease in children, the second with the curricula and practices of the institutions for the training of workers with children; the third with a study of the medical facilities available for children, the fourth with a study of the opinions of scientists with reference to preventive measures, and the fifth with an actual nation wide survey of the use of preventive measures on young children. In addition to utilizing facilities available through organizations such as the American Medical Association, and the American Hospital Association, the committee made a survey of training institutions and secured information from practicing physicians all over the country. In making their study of preventive measures, the committee, with the coöperation of many local agencies, interviewed parents over the entire country, in order to determine the extent to which preventive meas-

ures are utilized. Some 80,000 interviews were secured.

The third committee of this section dealt with prenatal and maternal care under the chairmanship of Dr. Fred L. Adair. It studied the qualifications, training, and distribution of individuals in this field, together with the institutions available for training. In addition, the scientific literature on the development of the fetus, on maternal care, and on infant morbidity and mortality was summarized.

So much material was gathered by this section that a second meeting is scheduled for the middle of February, 1931. At this meeting more complete summaries will be presented and the findings, particularly with reference to their medical aspects, will be presented to a medical group brought together under the auspices of the Conference.

The section on public health service was divided into three main committees, of which the first was on public health organization under the direction of Dr. E. L. Bishop. The subcommittees were concerned respectively with federal health organization, state health organization, local health organization, rural health organization, nonofficial agencies, child health work, and the private practitioner. Each of these subcommittees submitted detailed reports. Of these the one which attracted the most attention was that on federal health organization, which contained specific recommendations with reference to the work of the Children's Bureau of the United States Department of Labor. The controversy which developed attracted a great deal of newspaper publicity, and has served in some measure to obscure the solid and substantial work done by the many technical committees in all sections of the Conference.

The next committee of this section dealt with communicable disease control, under the chairmanship of Dr. George H. Bigelow, and the third committee dealt with milk production and control under H. A. Whitaker, of the State Board of Health of Minnesota. The reports of both these committees and their subcommittees are of much interest to the practitioner.

Medical men were also well represented in the remaining two sections of the Conference. Section III, on education and training, under the chairmanship of F. J. Kelly, was divided into committees dealing respectively with the family and parent education, the infant and preschool child, the school child, vocational guidance and child labor, recreation and physical education, special classes, and youth outside the home and

school. Section IV, the handicapped child, prevention, maintenance, and protection, under the chairmanship of C. C. Carstens, was divided into four main committees, of which the first dealt with state and local organizations for the handicapped, the second with the physically and mentally handicapped, the third with those socially handicapped by virtue of dependency, and the fourth with those socially handicapped by virtue of delinquency.

The results of the Conference may be embodied roughly under three main heads, of which the first is to be found in the bringing together of our present knowledge and practice in a series of comprehensive technical reports. Obviously, such a survey is of value both to the scientist and to the practitioner. It will provide source material for many years. One has only to glance through the directory of the Conference to see how adequate the personnel was from the technical standpoint, and to survey the preliminary reports to see how completely and carefully the basic material was gotten together.

A second result from such a Conference is to be found in the bringing together of a large number of individuals interested in children from every area in the United States, to discuss mutual problems and to formulate basic principles. Such an exchange of points of view among individuals responsible for local, state, and national programs, together with individuals who are making a personal contribution, cannot help but have far reaching effects in the modification and development of effective programs for children. I wish to stress particularly the informal educational aspect of the Conference, because so many individuals hearing of a Conference are apt to look for some startling or significant immediate result. As a matter of fact, the field of child health and welfare has become so broad and so inclusive, that there is no single specific procedure which can solve all the problems of children in the United States. Rather is there a great structure of knowledge, practice and research moving forward at all times, which, however unwieldy, may be looked upon as far in advance of that stage of scientific and practical development, in which a single striking procedure or conclusion would represent a great advance. In looking through the Conference material one is amazed at the amount and extent of interest in children and at the effectiveness of the work now being done. To those who realize how far we have come since the first White House Conference called by President

Roosevelt, in 1909, this was a most pleasing aspect of the entire Conference.

The third result is to be found in the education of the public with reference to the field of child welfare. The American people are fundamentally interested in their children. Any national survey under the auspices of the President of the United States serves to bring home to minor and major governmental units and to the public responsible for those units the importance of a coordinated program in our attack upon the many problems concerning the health and well being of children which concern us as a nation and as individuals.

The general conclusions of the conference are embodied in nineteen points constituting the Children's Charter, which follows:

THE CHILDREN'S CHARTER

President Hoover's White House Conference on Child Health and Protection, recognizing the rights of the child as the first rights of citizenship, pledges itself to these aims for the children of America:

1. For every child, spiritual and moral training to help him to stand firm under the pressure of life.
2. For every child, understanding and the guarding of his personality as his most precious right.
3. For every child, a home and that love and security which a home provides; and for that child who must receive foster care, the nearest substitute for his own home.
4. For every child, full preparation for his birth, his mother receiving prenatal, natal, and postnatal care; and the establishment of such protective measures as will make childbearing safer.
5. For every child, health protection from birth through adolescence, including periodical health examinations, and, where needed, care of specialists and hospital treatment; regular dental examination and care of the teeth; protective and preventive measures against communicable diseases; the insuring of pure food, pure milk, and pure water.
6. For every child, from birth through adolescence, promotion of health, including health instruction and a health program, wholesome physical and mental recreation, with teachers and leaders adequately trained.
7. For every child, a dwelling place safe, sanitary, and wholesome, with reasonable provisions for privacy, free from conditions which tend to thwart his development, and a home environment harmonious and enriching.
8. For every child, a school which is safe from hazards, sanitary, properly equipped, lighted, and ventilated. For younger children nursery schools and kindergartens to supplement home care.
9. For every child, a community which recognizes and plans for his needs, protects him against physical dangers, moral hazards, and disease; provides him with safe and wholesome places for play and recreation; and makes provision for his cultural and social needs.
10. For every child, an education, which, through the discovery and development of his individual abili-

ties, prepares him for life; and through training and vocational guidance prepares him for a living which will yield him the maximum of satisfaction.

11. For every child, such teaching and training as will prepare him for successful parenthood, homemaking, and the rights of citizenship; and, for parents, supplementary training to fit them to deal wisely with the problems of parenthood.
12. For every child, education for safety and protection against accidents to which modern conditions subject him, those to which he is directly exposed and those which, through loss or maiming of his parents, affect him indirectly.
13. For every child who is blind, deaf, crippled, or otherwise physically handicapped, and for the child who is mentally handicapped, such measures as will early discover and diagnose his handicap, provide care and treatment, and so train him that he may become an asset to society rather than a liability. Expenses of these services should be borne publicly where they cannot be privately met.
14. For every child who is in conflict with society, the right to be dealt with intelligently as society's charge, not society's outcast; with the home, the school, the church, the court and the institution when needed, shaped to return him whenever possible to the normal stream of life.
15. For every child, the right to grow up in a family with an adequate standard of living and the security of a stable income, as the surest safeguard against social handicaps.
16. For every child, protection against labor that stunts growth, either physical or mental, that limits educa-

tion, that deprives children of the right of comradeship, of play, and of joy.

17. For every rural child as satisfactory schooling and health services as for the city child, and an extension to rural families of social, recreational, and cultural facilities.
18. To supplement the home and the school in the training of youth, and to return to them those interests of which modern life tends to cheat children, every stimulation and encouragement should be given to the extension and development of the voluntary youth organizations.
19. To make everywhere available these minimum protections of the health and welfare of children, there should be a district, county or community organization for health, education, and welfare, with full time officials, coördinating with a statewide program which will be responsive to a nationwide service of general information, statistics, and scientific research. This should include:
 - (a) Trained, full time public health officials, with public health nurses, sanitary inspection, and laboratory workers.
 - (b) Available hospital beds.
 - (c) Full time public welfare service for the relief, aid, and guidance of children in special need due to poverty, misfortune, or behavior difficulties, and for the protection of children from abuse, neglect, exploitation, or moral hazard.

For every child these rights, regardless of race, or color, or situation, wherever he may live under the protection of the American flag.

PROCTOLOGY AND QUACKERY*

By W. A. FANSLER, M.D., F.A.C.S.

Assistant Professor of Surgery, University of Minnesota. Associate Surgeon, Minneapolis General Hospital.

MINNEAPOLIS, MINN.

Second only to the field of genito urinary disease proctology has offered the most fertile and widely exploited field for the charlatan and the quack. The cause of this I place squarely upon the shoulders of the medical profession and the medical colleges. In the past, practically no instruction in proctology was offered to students of medicine. The result was that the average medical student graduated with practically no knowledge of rectal disease. Even at present there are but few institutions which offer anything like adequate training. Originally this may have been due to the fact that there were no teachers available who had much experience in this field. On the other hand the departments of

general surgery offered every opposition to anyone who wished to develop a department of proctology. It was deemed a personal affront to assume that the general surgeons were not caring for their rectal cases in the best possible manner. Proctology was seen as just another specialty to divorce the general surgeon from another portion of his work. Regardless of what may have been thought by the surgeons, the fact remains, that rectal surgery was done in a very haphazard and slipshod manner. It rather compares to some of the tonsillectomies where it was often difficult to say whether a larger portion of the tonsil had been removed or left in the throat. After-care was neglected, or thought unnecessary. The patients, however, thought differently. After going through the ordeal of the operation many were not benefited, or at least not permanently cured,

*Presidential address delivered before the Thirty-first Annual Meeting of the American Proctologic Society, Buffalo, N. Y., June 23, 24, 1930.

and many were undoubtedly made worse. With so many patients having this experience it is no wonder that the public feared the pain of rectal operations, and distrusted the results.

With rectal diseases neglected, or poorly treated by the profession, the field was ripe for anyone offering a method which avoided operation. About 1891 the injection method for the treatment of hemorrhoids came into being. It was heralded as a bloodless, painless, non-surgical method of cure. Even as crudely as it was done, I think I would rather have taken a chance on the injection, than on the surgery as it was done at that time; in fact, than some of the surgery I have seen more recently. The surgeons at once decried this method and since the general practitioner and internists usually referred rectal cases to the surgeon for operation—they were influenced by the surgeon's opinion and fell into line. It was the usual "dog in the manger" attitude. They condemned this method without adequate investigation and refused to develop their own surgical treatment to a point where it compared favorably in technique and results with surgery done on other parts of the body. You may not agree with the injection treatment of hemorrhoids but there is no doubt but that from this method came the real beginning of the development of the specialty of proctology as a distinct branch of medicine.

In view of these facts it is no wonder that an uninformed public, afraid of "the knife" and of hospitals were ready to accept any method by which they could avoid operation. Here is where the charlatan had his day. He at once realized the golden opportunity. There were few well informed men in the legitimate ranks of the profession, so his path was doubly easy. The result was a crop of pile and rectal specialists who went about the country, stopping a short time in each town and giving injections and treatments to all who would come to them. In addition each "specialist" had a so-called "secret formula" for his injections, which he would sell to any physician who was gullible enough and had the price.

The very fact that this was the type of man who was exploiting proctology caused many medical men to hesitate to enter the field as a specialty. To be a proctologist branded you as a quack or at least as an object of suspicion. There were, however, a few fearless workers and in 1899 a small group of proctologists gathered together and organized the American Proctologic Society. Since that time there has been a definite effort to put the specialty of proctology upon an

ethical basis, and to secure for this branch of medicine the recognition it deserves. The results were slow at first as medical colleges were loath to permit any special instruction in rectal diseases. At the present time though the majority are offering some special instruction in proctology, most of these courses are not sufficient to give adequate training to one wishing to specialize in rectal diseases. They do, however, give instruction sufficient for the general practitioner and enough that the student specially interested may be stimulated to continue post-graduate study.

From the large group of advertising specialists, naturally, there were a few who were capable, and their personality such that they were successful. Medical ethics and their standing with the medical profession meant nothing to them. They reduced the status of the medical profession to a trade. They preyed upon the credulity and fears of the public and in some instances were able to establish large practices or institutions for the treatment of rectal diseases.

The financial success of these specialists and institutions aroused the interest of a certain type of medical men. As a result there has been another wave of commercial exploitation of the specialty of proctology. The field of proctology was sparsely covered and the time was ripe. A number of individuals, with business foresight and some experience in proctology, began to offer courses in proctology for medical men, osteopaths, chiropractors or, in a word, anyone with the price of the tuition and a license, to practice the healing art under any guise whatever. They flooded the country with literature offering courses varying from two weeks to a month. The charge for these courses varied from one hundred to five hundred dollars. The principal inducement offered is, that after two to four weeks you will be a full fledged proctologist, and able to earn a large income. The income feature being the one most stressed. The majority of the type of men who would be attracted by such advertising matter is obvious. The result is also obvious—a large number of inadequately trained individuals, who have been led to believe that they are proctologists. The moral question of attempting to treat a fellow human being without adequate training, is a matter of no importance, at least to the men who offer these courses. A rectal examination made by a person of this type, is a farce. In many cases their entire medical background consists of a few lessons in spine cracking by correspondence followed by equally abbreviated instruction in rectal diseases. I have seen many

patients who have gone to this type of specialist and in the majority of instances the diagnosis must have come from the imagination of the examiner, certainly not from any pathological condition present. That some cases may be cured by these people is admitted, but it must also be remembered that many rectal conditions which are painful and seem severe to the patient, are really very minor in character. With this sort of thing going on in the specialty of proctology it is well that the capable practitioner know of the tricks and half truths this group foist on the uninformed public. This is a matter of protection both for the public and the ethical physician.

Some of the things which ethical practitioners of proctology should know and be able to tell his patients and colleagues about the advertising proctologists are these. The first is that, despite their blatant claims, none of them have any "secret methods of treatment" which are not known to the profession at large. The second is, that many of their promises and statements are untruthful or at least gross exaggerations. Most of their advertising matter states that they cure piles without the knife, and then add that "other rectal diseases are also cured by mild ambulatory methods." The mild ambulatory methods mean, of course, operation under local anesthesia, or the use of some caustic paste which is slower, more unreliable and more painful than operation. We all know that external hemorrhoids cannot be cured without surgery. However, with the advertiser, external hemorrhoids are removed as skin tags or mucous sacs, the word pile never being mentioned. That such a thing as an external *pile* is present, is never admitted.

In securing patients, the chief points are the guarantee of a cure, the fact that the specialist has had great experience, and that he has a special method known only to himself. The fear of operation, the fear that cancer may develop, the fear of losing control, etc., are used freely. Literature stating how many thousands of cases have been treated, lists of satisfied patients, etc., are stock and trade matters.

A few passages from some of the advertising matter may be of interest. This, from the first of a series of follow-up letters—"Of course the most important question in your mind is, *Can I be cured?* My answer is, that we can treat any case of piles, fistula, fissures, tabs or other rectal disease which has not been neglected so long it has become hopeless or developed cancer. If treatment is not successful you need not pay a cent . . . Over 19,000 people have been relieved of

one or more rectal troubles under our treatment." From a second letter—"Can it be possible that you do not realize the seriousness of your rectal trouble . . . or the number of people we turn away almost every day because their condition has reached a stage beyond the help of science or human skill?"

"So far this year we have rejected 93 cases, which should convince you that my repeated warnings about cancer and other incurable complications are based on my daily observations and I would not be exercising my duty as a physician if I did not do my utmost to save you from a similar fate."

And so on ad nauseam.

What is the answer to this problem? If we are to secure for the specialty of proctology the recognition it deserves, and keep it from the hands of the charlatan, we must be able to discuss their methods intelligently and be able to show the trickery and dishonesty of their schemes. We must interest enough capable and high principled men in the profession to take up the specialty of proctology, so that every community may have a reputable proctologist available for consultation. Lastly, we must constantly urge the more adequate instruction of proctology, in our medical schools.

MENACE OF MENTAL FACTORS IN BODILY DISEASE

CORNELIUS C. WHOLEY, Pittsburgh (*Journal A. M. A.*, Oct. 11, 1930), cites three cases which represent somewhat extreme instances of the extent to which apparent surgical and medical syndromes may mask the real disease, and in which mental factors become converted into bodily expression. Less pronounced conditions of invalidism and organic disturbance are frequently brought about wholly, or are exaggerated, by mental or emotional maladjustments. Consideration of the mental situation in no way, either by inference or in fact, presupposes any slighting of the organic agencies of disease. Evaluation of mental factors necessitates study of the emotional life of the individual, knowledge of the family setting and, at times, a readjustment of environment and domestic relations. In "frozen" cases, "cracking up" the deadlock is well nigh impossible. Early detection of the morbid process, with firm and tactfully applied measures, will alone arrest the morbid infection. Though in certain instances it is conceded that a degree of organic change may be present, its relationship to the exaggerated symptoms could, at most, only be that of partly determining the sympathetic pathway to be followed by the neurosis.

This is the first of a series of ten articles entitled "Roentgenology and Its Various Phases," by Dr Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

By LEO M. RIGLER, M. D.

University of Minnesota

INTRODUCTION

A. NATURE AND VALUE OF ROENTGEN EXAMINATION

X-ray diagnosis may be considered to be a highly specialized part of physical diagnosis. It represents, in fact, only a part of the physical method of inspection. In the diagnosis of certain diseases, especially those of the skin, inspection plays by far the most important part and the dermatologist receives most of his information through the visualization of the skin lesions. In the diagnosis of surgical and internal diseases, inspection could play just as important a part, but the ordinary methods are handicapped. It is not possible to inspect the lungs—one can only look at the external thorax. And it is impossible to inspect the stomach—except at operation where many diagnoses used to be made—one can only see the external abdomen. In a case of fracture one sees by the ordinary method only the deformity caused by the fracture, not the bone itself. The roentgen ray affords us a means of actually viewing these concealed parts of the body and obtaining a visual picture of their condition. The roentgenologist is therefore somewhat in the position of the gross pathologist for he is actually looking upon the pathological changes which take place in certain organs.

But we must always bear in mind that the x-ray diagnosis is only a part of the findings in any particular case. Under some circumstances, such as in fractures, it may be by far the most important diagnostic feature—in other types of cases it may be the least important, but always it is only one part. We must guard against two wrong conceptions of x-ray diagnosis. One holds that it is worth little or nothing; the other is that it is the final word on all cases and supercedes all other findings. The roentgen ray as a helpful diagnostic measure is thoroughly established. It has probably done more than any other one thing for the remarkable advancement in diagnosis and treatment which has occurred during the last twenty years and its value in certain diseases cannot be too highly emphasized. But its value is distinctly limited and is always

to be considered as only a part of the examination of every patient.

In estimating the value of the x-ray findings we should consider them in the same way as we would the gross pathological findings. In some respects and in a few limited conditions the x-ray examination has advantages even over the gross pathological examination. This is due to the fact that in doing a roentgen examination we are dealing with a living organ which has a physiology, has movement, the disturbances of which can be determined. This is especially true in the examination of the gastro-intestinal tract where small changes in the motility, the mobility, and the peristaltic movements may reveal a pathological change which can hardly be found on gross examination of the organ involved. We may consider then that the x-ray examination of any organ may give two types of information; first, the gross pathological appearance of the organ; second, the disturbances in the movements and to some extent in the physiology of the organ.

B. X-RAY FILMS

1. *Characteristics of a roentgenogram*

The x-ray film taken of any part of the body is simply a record of different densities. It is similar to a photographic film except that the source of light is an x-ray tube instead of ordinary lighting apparatus, and the color of the film depends upon the differences in density of the object photographed rather than upon differences in color. The denser or the thicker the object, the more rays will be absorbed by it and the less the exposure will be in that part of the film covered by the object. The amount of radiation which reaches the film determines the amount of exposure which is expressed by the film in terms of black and white. The less the exposure or the less the amount of rays reaching the film or the denser or thicker the part covering the film is, the whiter will be that portion of the film. And the contrary is true. The x-ray film is therefore not simply a picture because it requires interpretation into terms of ordinary vision before it can be put to any use in diagnosis. The greater the skill in interpretation the more value will the film have in diagnosis. The tech-

nique of making the film is also of importance but this is a comparatively simple matter. The interpretation depends upon a thorough knowledge of normal and pathological anatomy, of clinical medicine, and of the various confusing factors of error which enter into the production of every x-ray film.

2. *The factors affecting the production of an x-ray film.*

First of all is the technique of the x-ray photography. This depends upon certain fixed principles and can be mastered with ease. It must be borne in mind that good photographic technique is imperative as a prerequisite for good x-ray diagnosis. In the production of the shadows upon a film all the parts of the body which are covering the film take part. The shadow produced is therefore a summation of all the shadows which would be produced by each of the parts there present. For example, a film of the arm will show a distinct white shadow which we take to represent the humerus. Actually it represents the humerus plus all the muscles, subcutaneous tissue and skin in front and in back of it, so that if the muscles were removed over one portion of the arm a distinct change in the appearance of the shadow of the humerus would be produced even if the bone itself had been left untouched. The factor of superimposition of one shadow upon another must be considered also. The x-ray film is a flat picture possessing no depth so that we must take views in two directions in order to get a complete view of the part desired. Distortion is present in most x-ray films, the object photographed usually being larger than its actual size. The element of contrast also plays an important part. In order to see the shadow of an organ it must lie next to another object of greater or lesser density than itself. Otherwise there will be no contrast between it and its surroundings and it will not be able to be distinguished as a separate organ. Thus the humerus can be seen distinct from the muscles which surround it because of its greater density. The muscles can usually not be distinguished from each other because their densities are approximately the same.

Many extraneous factors of error enter into the production of an x-ray film. These are too numerous to detail but are concerned chiefly with the technical side of roentgenology. Defects in the films, defects in the intensifying screens, objects in the clothing, warts, and papillomata of the skin all tend to produce confusing shadows. The superimposition of certain structures of the

body over others produces confusion, for example, the shadow of the breast or nipple in the lung field.

3. *Common errors and confusing shadows.*

- a. Film and intensifying screen defects.
- b. Objects in the clothing.
- c. Densities in the skin such as warts.
- d. The breasts, nipples, and pectoral muscles overlying the lung fields.
- e. The overlapping of muscles or tendons upon a bone or of one bone upon another producing lines often mistaken for fractures.
- f. The normal epiphyseal lines of the bones.
- g. The vascular channels in the skull, pelvic bones, and scapula.
- h. The nucleus of the body of the hyoid bone mistaken for a foreign body.
- i. Islands of compact bone producing areas of extra density in cancellous bone.
- j. A multitude of normal variations especially in bones.
- k. Overlapping of gas filled bowel upon the bones of the pelvis producing the appearance of defects.

It is a safe rule, when in doubt, to repeat the examination and to take roentgenograms of the opposite side if possible.

4. *Technical facts of especial importance.*

- a. Those parts of the body which are nearest the film will be the most distinct and have the sharpest outlines.
- b. Distortion in size and outline is produced by the deviation of x-rays and can be eliminated by removing the x-ray tube to a distance of six feet or more. In this way the exact size of the heart can be reproduced upon the x-ray film.
- c. In order to produce the best results, lead cones are used to absorb the deviating rays and the smallest cone or diaphragm possible should always be used.
- d. Intensifying screens are used to increase the amount of exposure and thereby reduce the time necessary to take a film.
- e. The Potter-bucky diaphragm is used in making films of thick portions of the body, as the spine, gall bladder or kidneys. This tends to reduce the secondary radiation which tends to "fog" the x-ray film.
- f. The x-ray tube should have the smallest focal spot possible, consistent with the safety of the tube. The smaller the focal spot, the better the detail in the film.
- g. Stereoscopic films are desirable in taking

certain parts of the body, especially the lungs because they permit an estimation of the depth of any object and give a three-dimensional view of the part examined.

h. In taking films of any part of the body the following points are important:

- (1) Use the smallest size of film, the smallest size of cone, and the smallest focal spot practical in the particular case.
- (2) Always take films in two positions at right angles to each other if possible. An antero-posterior or postero-anterior view and a lateral view are most desirable. If these are impossible other views may suffice and stereoscopy, where two views cannot be made, will help.

C. X-RAY SHADOWS IN THE BODY

The shadows seen in the body and their distribution in the order of their density beginning with the lowest are as follows:

1. Gas.

a. Normal distribution.

(1) Paranasal sinuses, mastoids, nasal cavities, nasal and oral pharynx, a strip between the tongue and the floor of the mouth.

(2) Larynx and respiratory tract i. e., glottis, trachea, bronchi and lungs.

(3) Gastro-intestinal tract.

The stomach shows the only normal fluid level in the body, the cardia usually being open and containing gas with gastric secretion beneath. The colon also contains gas normally but the small bowel does not except for the first portion of the duodenum which occasionally contains a gas bubble. In infants and young children gas is also present normally in the small bowel.

b. Abnormal presence of gas.

(1) By injection into the ventricles of the brain, the spinal canal, the pleural cavity, the peritoneal cavity, the perirenal region, the pelvic organs.

(2) Head and neck. Subcutaneous emphysema, gas phlegmon, meningocele.

(3) Thorax. Emphysema, spontaneous pneumothorax, abscess, bronchiectasis, tuberculous cavities, pneumopericardium.

(4) Abdomen. Meteorism of the colon, ileus, peritoneal abscess, rupture of a vicus producing gas in peritoneal cavity.

(5) Soft tissues anywhere. Subcutaneous emphysema, gas gangrene.

2. Fat.

Between the muscles especially of the newborn permitting them to be outlined by contrast, around

the kidney permitting it to be visualized by contrast, in bursae, behind tendons, and in the abdominal wall.

3. Internal organs.

4. Muscles.

5. Blood containing organs, heart, blood vessels.

6. Calcium.

a. Normal distribution.

(1) Throughout the skeleton.

(2) Cranial cavity. The pineal body, plexus choroidea, small areas in the dura matter.

(3) Neck. The hyoid bone and ligaments, in the laryngeal cartilages and tracheal rings.

(4) Thorax. In the cartilages of the ribs especially the first.

b. Abnormal presence of calcium.

(1) Cranial cavity. Psammoma, tubercles, cysts, tumors.

(2) Neck. Salivary calculi, calcified tuberculous glands, calcified thyroid gland.

(3) Thorax. Calcified lymph nodes in the hilus, tuberculous lesions in the lungs, old empyema, old abscess, pneumo-koniosis, in the pericardium, valves of the heart, and in the aorta especially the arch.

(4) In the blood vessels, especially the arteries anywhere, and as phleboliths in the veins especially in the pelvis.

(5) Abdomen. Calculi in the biliary tract or in the urinary tract, in the pancreas, cysts, calcified tuberculous lymph nodes, rarely in a renal or abdominal aneurysm, calcified myoma or ovarian cyst, in a teratoma, in the abdominal aorta.

7. Foreign bodies, especially metallic.

May be present anywhere in the body.

D. AIDS TO EXAMINATION

1. General considerations.

In the case of certain parts of the body, proper visualization is impossible because of the lack of natural contrast with the surrounding tissues. In order to overcome this handicap certain substances are used in various organs to produce this contrast, either by decreasing their density, as for example, by the introduction of a gas, or by increasing the density by the introduction of a heavy metallic salt. These substances and their application are given below.

2. Introduction of air or other gases.

a. In the peritoneal cavity to outline the internal organs.

b. In the perirenal tissue to outline the kidneys. (Obsolete.)

c. In the female generative organs.

d. In the spinal canal, the ventricles of the brain and in the subarachnoid spaces.

e. In the pleural cavity to distinguish the pleura from the lungs.

3. *Barium and bismuth salts, especially barium sulphate.*

a. In the gastro-intestinal tract either by mouth or by rectal injection.

b. Into draining sinuses to visualize their ramifications.

4. *Sodium iodide, sodium bromide, potassium iodide, silver iodide, thorium, etc.*

a. In the urinary tract either through a catheter into the bladder or through an ureteral catheter into the kidney pelvis and ureter.

b. Into draining sinuses and pleural cavities.

5. *Iodized oil, a 40% suspension of iodine in oil (lipiodol or Iodipin).*

a. Into the trachea and bronchi.

b. Into the accessory nasal sinuses.

c. Into the uterus and Fallopian tubes.

d. Into the seminal vesicles and the urethra.

e. Into draining sinuses and cavities.

f. Into the spinal canal and the ventricles of the brain.

6. *Sodium tetraiodophenolphthalein or sodium tetrabromophenolphthalein.*

a. Either intravenously or by mouth to fill the gall bladder.

7. *Uroselectan.*

a. Intravenously to visualize the kidney pelvis, ureters and bladder.

E. METHODS OF ROENTGEN RAY EXAMINATION AND THEIR ATTRIBUTES.

1. *Film.*

The film method is used throughout the body and has the advantage of giving very fine detail and of preserving a permanent record.

2. *Fluoroscopy.*

The fluoroscopic method is also used. This depends upon the production of an image upon a screen coated with crystals which glow in the dark when struck by the x-rays. The image can thus be seen and moving objects can thus be studied in a great variety of positions, and manipulation can be made. This method is particularly applicable to the study of the heart, the lungs, the gastro-intestinal tract, the urinary tract, and to the reduction of fractures. The disadvantages are that it leaves no permanent record and that the finest changes in the outline of an organ cannot be seen because the image produced is not sharp.

DISEASES AND ORGANS WHICH SHOULD BE EXAMINED WITH THE ROENTGEN RAY AS AN AID TO DIAGNOSIS.

1. *The osseous system.*

a. Congenital defects, dystrophies, nutritional disorders.

b. Traumatic conditions of all kinds.

c. Infections.

d. Tumors.

2. *The head.*

a. All the above under osseous system.

b. The accessory nasal sinuses.

c. The mastoid processes and internal ear.

d. The teeth.

e. Intracranial diseases.

3. *The respiratory tract.*

In practically all diseases affecting it, including, now, the bronchial conditions.

4. *The heart and great vessels* and to a lesser extent all the arteries.

5. *The diaphragm, mediastinum, thymus and thyroid.*

6. *The gastro-intestinal tract* especially for ulcer, tumor, infectious diseases, anomalies.

7. *The gall bladder* for all diseases affecting it.

8. *The urinary tract* especially for calculi, tumors, and secondary changes due to infections.

9. *The genitalia* to determine their patency, and to a lesser extent abnormalities.

10. *In cases of pregnancy.*

11. *Miscellaneous conditions.*

a. Obscure tumors of abdomen.

b. Concrements and calcifications anywhere in the body.

c. Foreign bodies.

DEFINITION OF TERMS.

1. *Character of shadows.*

In discussing the character of the various shadows seen on an x-ray film the following terms are commonly used:

a. *Density.*

(1) Increased density, indicating a lighter (or whiter) shadow on the x-ray film or a darker one on the fluoroscopic screen. This is produced by a substance of either great density or great thickness.

(2) Decreased density, indicating a darker (or blacker) shadow on the x-ray film or a lighter one on the fluoroscopic screen. This is produced by a substance of either low density or small thickness.

b. *Radiability.*

(1) Increased radiability has the same significance as decreased density.

(2) Decreased radiability has the same significance as increased density.

2. Positions.

The position of the patient relative to the x-ray film or fluorescent screen and the x-ray tube at the time of examination modifies the resultant picture. To denote this position the following terms have been devised. The film and fluorescent screen always have the same relative position.

a. Postero-anterior. The tube is behind, the film in front of the part examined.

b. Antero-posterior. Reverse of above.

c. Lateral. The tube is either medial or lateral to the part examined, the film the reverse.

d. Obliques. The portion of the body next to the film or screen is used in the terminology; thus, in the position of right anterior oblique, the patient or part is at an angle of 45° , the tube being behind and to the left, the film in front and to the right. The left posterior oblique is exactly the reverse, etc.

This is the first of a series of four articles covering the field of Immunization by Dr. H. D. Lees, Assistant Professor of Preventive Medicine and Public Health, and Assistant Director of Student Health at the University of Minnesota. The concluding articles will appear in the fifteenth of the month issues until the series is completed.

IMMUNIZATION AGAINST DIPHTHERIA*

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Prophylaxis in diphtheria has long since passed the experimental stage. No community need have an otherwise good health record marred by even an occasional diphtheria death. The complete control and eradication of diphtheria depends upon an enlightened public, and an increased interest and activity of the medical profession as a whole in the use of known and proven procedures. Accurate diagnosis is established with the assistance of the laboratory, by demonstrating the presence of the diphtheria bacillus in nose and throat cultures obtained from the sick individual. Diphtheria antitoxin, the sovereign remedy produced by Von Behring and Kitasato in 1890, will almost invariably prevent mortality if administered at the onset of the disease in sufficiently large dosage. A marked decrease in diphtheria mortality rates has followed the more widespread and intelligent use of antitoxin during the past 25 years. In Minnesota, the diphtheria death rate in 1901 was 43.9; in 1911 it was 14.9; in 1921 it was 9.0 and in 1928 it was 2.7. In spite of this most encouraging progress, we could not hope for the complete disappearance of the disease until we had some means of producing a lasting immunity in susceptible persons. The works of Schick, Theobald Smith, Park and Ramon have made the task of diphtheria prevention a comparatively easy one.

THE SCHICK TEST

Schick¹, in 1913, showed that there is a wide

variation in the diphtheria antitoxin content of the blood of various individuals. His work quite definitely established the fact that an individual who shows no reaction at the site of intradermal injection of one-fiftieth of the M. L. D. of diphtheria toxin, is immune to the disease. The blood serum of such a person will show on titration an antitoxic content of at least 0.03 units per cubic centimeter. This is commonly spoken of as the Schick level. Laboratory and clinical confirmation of Schick's work has accumulated in abundance, indicating that the Schick test, properly applied and interpreted, is a reliable index of immunity or susceptibility to diphtheria. To eliminate possible error in work with the Schick test, the following points should be borne in mind:

The toxin and normal saline diluent should be freshly mixed at the time the tests are to be applied. Since the highly diluted toxin rapidly loses its potency, the test material should be used within six hours of the time it is prepared.

Accurate dosage of the diluted toxin should be injected intradermally into the flexor surface of the forearm. The product of some manufacturers calls for an individual test dose of 0.2 c.c. and of others 0.1 c.c., depending upon the amount of diluting fluid which is added to the toxin.

The tests should be read on the fifth, sixth, or seventh day after being applied, especially if no control test is used. This is to avoid confusing positive reactions with pseudo reactions. The pseudo reaction, due presumably to bacterial pro-

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tein products, has usually subsided by the fifth day.

The typical positive reaction will show distinct erythema, generally some degree of induration, and later a fine desquamation. The reaction disappears slowly and a pigmented area usually remains for a month or more. Questionable reactions should be interpreted as positives.

Dudley² has shown that a dilute solution of diphtheria toxin, as is used in the Schick test, is very unstable when in contact with phenol and other antiseptics, and even shaking the mixture will destroy it. In New Zealand he drove fifty miles with another worker to read Schick tests, and found only forty per cent of the children giving a faint atypical reaction. The test material, he learned, had been mixed before leaving the laboratory on this fifty-mile drive. This group was then retested with material mixed on the spot, and sixty-two per cent of those who were previously recorded as negative then gave a positive reaction.

Most infants at birth possess a congenital, passive immunity to diphtheria. This immunity rapidly fades, however. Zingher³ reports that in New York sixty per cent of infants are susceptible at six months of age, and that by the end of the first year of life ninety per cent are susceptible. Von Groer and Kasowitz⁴ have shown that breast feeding delays the loss of congenital immunity. After the second year of life the percentage of immunes in any community gradually increases. This active immunity develops as a result of subclinical infection acquired through contact with frank cases, the mild unrecognized cases, and carriers. The crowded living conditions in a city like New York naturally afford greater opportunity for contact with the diphtheria bacillus than is presented to children living on Minnesota farms. Diphtheria morbidity rates have been higher for many years in New York, too, than in Minnesota. This undoubtedly explains why in University of Minnesota students we have approximately fifty per cent of susceptibles, while in adults of twenty years and over in New York City, fifteen per cent have been found susceptible. Zingher³ found in the poorest districts of New York City as low as thirty per cent positive Schick reactors among school children, whereas in some of the better class schools there were sixty per cent susceptible. In any given community, therefore, we will find that the percentage of persons susceptible to diphtheria varies in direct ratio to the previous prevalence of the disease in that community.

TOXIN-ANTITOXIN AS AN IMMUNIZING AGENT

In 1909 Theobald Smith⁵, in the course of his experimental work, observed that toxin which had been neutralized with antitoxin would produce in guinea pigs active immunity which persisted for several years. Park⁶, in 1913, described the method which he had perfected for the preparation of toxin-antitoxin as an immunizing agent for use in the human. Since that time, this product has been used extensively in this country, and millions of children have been rendered actively immune to diphtheria through its use. The common practice in recent years has been to give, at weekly intervals, three injections of the 0.1 L+ dose of underneutralized toxin. We have used five doses instead of three for immunization of nurses at the University of Minnesota during the past three years, because in our experience approximately fifty per cent remained susceptible after receiving the three doses. The Dicks⁷ report that of adults retested by them after three doses of toxin-antitoxin, only twenty-four per cent showed entirely negative Schick tests. In children, however, a much higher percentage will be found to be completely protected by three doses of toxin-antitoxin, various workers reporting from seventy to ninety-five per cent rendered immune. The value of toxin-antitoxin inoculations is strikingly illustrated by a report of the Health department of the city of Detroit, Michigan. Of 159,802 children under eleven years of age who had previously been given toxin-antitoxin, there were reported, during 1928, one hundred and fifty-four cases of diphtheria, or 0.96 cases per one thousand inoculated. During the same year among 121,543 children of the same age group who had not received toxin-antitoxin, there were reported 1,182 cases of diphtheria, or 9.73 cases per thousand. In other words, Detroit was able to reduce by ninety per cent the incidence of diphtheria in more than half its childhood population, by the administration of toxin-antitoxin.

The development of immunity following the use of toxin-antitoxin is relatively slow, usually requiring from three to six months. The Schick test should invariably be employed in all persons who have been inoculated, to determine whether or not complete immunity has developed. A single case of diphtheria developing in a child previously vaccinated will do much to discredit the value of diphtheria and other immunization work in that community. Toxin-antitoxin has proved to be a safe prophylactic agent. Park⁸ states that over two million inoculations have been made in New York without a single serious accident. Probably the major criticism made against

toxin-antitoxin is that on account of the antitoxin which it contains, it sensitizes the individual to the foreign protein of horse serum. Reports in the literature on this phase of the subject are extremely contradictory. Weinfeld and Cooperstock⁹ report that of ten nurses receiving diphtheria antitoxin, having one year previously been inoculated with toxin-antitoxin, six, or sixty per cent of them had definite serum reactions, one immediate and five delayed. Six University students having had no toxin-antitoxin, were treated for diphtheria during this same period, and one, or 16 per cent, gave a serum reaction. Gordon and Creswell¹⁰ are of the opinion that serum reactions are on the increase in this country, since 28.2 per cent of their series of 1,199 patients receiving diphtheria antitoxin in 1927 gave definite reactions. In their experience, persons who had received the repeated toxin-antitoxin injections were sensitized to a greater degree than those who had previously received antitoxic serum. The incidence of serum reactions following treatment with diphtheria antitoxin in their various groups was as follows: Those having had toxin-antitoxin, 73.5 per cent; Those having had previous antitoxin, 41.4 per cent; Those apparently not sensitized, having had neither antitoxin nor toxin-antitoxin, 19.1 per cent; Bauer and Wilmer¹¹, on the other hand, having observed 150,000 children for a period of from one to five years after receiving toxin-antitoxin, state that none have shown any tendency to protein sensitivity by test six months after the injections. Rosenau¹² says there is no instance on record of diphtheria antitoxin causing fatal anaphylactic shock in a person ill with diphtheria. It has been demonstrated in his laboratory that diphtheria toxin prevents anaphylactic shock in sensitized guinea pigs.

DIPHTHERIA TOXOID

Ramon¹³, of the Pasteur Institute in Paris, has prepared an immunizing agent by modifying diphtheria toxin by the addition of 0.3 per cent of formaldehyde, and heating at 40° to 42° C. for a period of three to six weeks. He found that a potent toxin so treated loses its toxicity but retains its antigenic properties. In Europe this product is known as "anatoxin," but in this country is distributed as diphtheria "toxoid." The product is practically innocuous to those animals which are most highly sensitive to diphtheria toxin. Ramon measures the toxicity of his anatoxin by injecting 5 or 6 c.c. under the skin of two three hundred gram guinea pigs. The material is acceptable if both animals remain well for a period of one month. Anatoxin has been

shown to remain nontoxic when kept under various conditions for long periods of time. It can withstand heating to 65° or 70° C. Its antigenic properties are measured by animal experiment also. Guinea pigs which have received 1 c.c. of anatoxin hypodermically, followed in three or four weeks by a second dose of 1 c.c., can withstand, ten days after the second injection, a dose of several thousand M.L.Ds. of the toxin. Ramon claims to have used anatoxin which had been prepared five years previously, and it had lost none of its immunizing powers. This comparatively new prophylactic has had wide usage in Europe and also in Canada, where it is produced by the Connaught Laboratories. Ramon and Helie¹⁴ state that toxin-antitoxin never was used extensively in France for several reasons:

1. Difficulty in preparation; requires preparation of a perfectly stabilized toxin and antitoxin, and accurate determination of the L+ dose.
2. Proper mixture of toxin with antitoxin, which must be controlled several times on numerous guinea pigs, and with precautions to guard against its disintegration after final preparation.
3. Accidents have occurred due to dissociation of the toxin-antitoxin complex as by freezing, or wrong dosage.
4. Toxin-antitoxin is very slow in producing immunity.
5. Its efficiency is not all that could be desired since the recommended three doses fail to immunize a considerable percentage.
6. The serum proteins which it contains are capable of sensitizing the individual to other sera.

Ramon now recommends three doses of toxoid rather than the two doses originally employed: a first dose of 0.5 c.c., followed in three weeks by a second dose of 1 c.c., and two weeks later a third dose of 1 c.c. The reason for the rather unusual intervals between the doses is made clear by the work of Glenny and his coworkers on primary and secondary antigenic stimuli as discussed by Dudley². Their work showed that when a dose of diphtheria toxin-antitoxin is given to an animal for the first time, no diphtheria antitoxin being present in the blood, there is a latent period of about three weeks before any antitoxin can be detected in the animal's blood. Antitoxin then appears and its quantity gradually increases to reach a maximum about eight weeks after inoculation. The antitoxin titre then slowly declines. This is the type of response to a primary antigenic stimulus in an animal with no previous

experience of the antigen employed. If after all, or nearly all, the antitoxin has disappeared from the blood of an animal which has had such a primary stimulus, a second injection of toxin-antitoxin is given, antitoxin appears in three days instead of three weeks, and the antitoxin titre reaches its height in about eight days instead of weeks. Moreover, the quantity of antitoxin produced is ten to one hundred times the amount produced by the original primary stimulus. An antigenic inoculation which produces this type of response is termed a secondary stimulus. Thus in an organism that has been sensitized by an antigen, although no antibody may be present in the blood, yet the animal, as regards its immunity, is in quite a different state to one which is not so sensitized. Such a sensitized, or experienced, animal may respond to further antigenic inoculations, or secondary stimuli, even if of very much smaller intensity than the primary stimulus, by making antibody at ten times the rate and ten times as potent as an inexperienced animal. The conception of primary and secondary stimuli is of fundamental importance in understanding the phenomena of immunity to infectious diseases.

During the present school year we have used diphtheria toxoid exclusively for immunization of students and student nurses at the University of Minnesota. Numerous reports in the American literature would indicate that toxoid should be used only in children, since a relatively high percentage of adults may be expected to give rather severe reactions. Some commercial preparations of diphtheria toxoid include a skin test solution, and it is suggested that toxoid be given only to those who give a negative skin reaction with this solution. After giving approximately fifteen hundred injections of toxoid to adults during the past few months, we are convinced that reactions following its use are neither more numerous nor more severe than are experienced following the use of toxin-antitoxin. Dick states that toxoid may be safely employed in immunizing adults. The allergic individual, in our experience, is the one most apt to give a brisk general reaction. The following case report illustrates this point. A young lady, age 32, gave a history of marked hypersensitiveness to strawberries. On several occasions during the past ten years she has been rendered acutely ill by eating as few as three or four strawberries. At these times she had nausea and vomiting, abdominal pain and diarrhea, a tingling sensation in the lips, tongue and throat, and a markedly diffuse

erythema and urticaria. The first injection of diphtheria toxoid, 0.5 c.c., produced no local or general reaction in this patient. The second injection, however, consisting of 1 c.c. of toxoid produced exactly the same chain of symptoms as she experienced after eating strawberries. The first symptoms appeared within ten minutes of the time she received this second injection, when she showed a flushing of the skin, slight edema about the eyes and lips, and numerous small urticarial wheals. Vomiting occurred one hour after receiving the injection of toxoid. Her temperature reached 100° F. but returned to normal within twenty-four hours. A total of four generalized reactions was reported in this series, each student being urged, at the time of each injection, to report any local or general reaction which might occur. None of these reactions were in any way alarming. One boy presented a marked vasomotor reaction forty minutes after receiving the second injection, accompanied by rather marked dyspnea. Prompt relief followed the administration of adrenalin.

The chief advantage of diphtheria toxoid over the toxin-antitoxin mixture is its greater antigenic properties. Workers who have had considerable experience with both of these products report that toxoid is a more efficient immunizing agent. Dick completely immunized 93.3 per cent of adults with three doses of toxoid, whereas 82 per cent were rendered immune by five doses of toxin-antitoxin. Schwartz and Janney¹⁵ immunized 98 per cent of preschool children with three doses of toxoid, and 86 per cent with three doses of toxin-antitoxin. Ramon and Helie¹⁴ conclude, after summing up numerous reports in the literature on the use of toxoid, that three doses of toxoid will confer immunity in 98 to 100 per cent of cases. In 1928, using two injections of toxoid in 217 preschool children of the Minneapolis Infant Welfare Society, we were able to produce complete immunity in 95 per cent. Two per cent of this group gave slight local reactions, but no systemic reactions occurred.

We are now retesting with the Schick test those students who were given diphtheria toxoid during the Fall quarter. Of those tested thus far, all adults, ninety-one per cent have shown completely negative Schick tests.

SUMMARY

Diphtheria toxoid is superior to toxin-antitoxin as an immunizing agent. Three doses, given to all children at about one year of age, is our best

means of further reducing diphtheria morbidity and mortality.

Reactions following administration of toxoid to children are rarely encountered. It may be safely used as an immunizing agent for adults; reactions in adults are not common.

Approximately ninety-five per cent of persons gain complete immunity to diphtheria following three injections of toxoid.

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CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1617.

The case is that of a woman, 53 years old, who at 5:30 P. M. on October 31, 1930, when returning from work, fell unconscious at the door. She remained so for about 20 minutes, foaming and frothing at the mouth. She was seen by a physician at 8:15 P. M.; was conscious, rational. Examination revealed blood pressure of 136/80; pulse 84; temperature 99.2°. For the past two weeks she had had a cold and for the past few days had felt mentally depressed. The last two days she had also had severe occipital headache. She had a slight ptosis of the left eyelid which had appeared sometime during the past two weeks.

About 2 A. M., November 1, she had a convulsion which lasted 15 minutes. She was seen during the forenoon of that day when her temperature and blood pressure were found the same as before. She still complained of headache. That afternoon she had another convulsion and was unconscious for about 20 minutes. That evening she had positive Babinski and temperature of 100.2°. She was sent to the hospital, and from 9:40 P. M., November 1, to 9:40 A. M., November 2, she had a number of convulsions; these began over the right side of the face, then went down the right side of the body, and then traveled over the left side; they occurred about every ten minutes. Examination of the eyegrounds showed no edema of the optic discs. The spinal fluid was under normal pressure; it contained 120 cells and no bacteria were found. Blood: white cells 3,075; red cells 5,000,000; hemoglobin 90 per cent. The patient vomited several times the morning of death. Trans-

illumination of the right frontal sinus showed slight cloudiness. Death November 3, 10:45 A. M.

Post-mortem report. All findings are negative except in the lungs and the cranial cavity. The lungs show a moderate edema and congestion. In the cranial cavity a subdural tumor 7x5x3 cm. is found, overlying the left frontal lobe. The tumor is sharply circumscribed and only loosely attached to the meninges. It compresses the brain; clearly does not originate from the brain tissue. The tumor is nodular in shape and of fairly firm consistency. It is shelled out very easily.

Microscopic examination shows it to be a typical psammoma (dural fibroma).

Comment. The position of the tumor, that is, compressing the left frontal lobe, explains the absence of localizing symptoms. The convulsions may be interpreted as a result of pressure on the left motor area. Histologically this is a benign tumor.

Autopsy—30—1578.

The case is that of a white man, aged 49, who was admitted to hospital October 23, 1930, at 1:05 P. M. He stated that on the night of October 18 he accidentally took "blue antiseptic tablets," thinking that they were cathartic pills. Within one hour his bowels moved profusely and he vomited for several hours. This vomiting continued Sunday and Monday. The vomitus was greenish in color and streaked with blood. The bowel movements had been profuse and watery but blood was not noticed. The patient took practically

no food from the night of the eighteenth to the time of admission.

Physical examination showed a slight puffiness of the face. The abdomen was distended but not rigid or tender. There was slight tenderness over the kidney area to deep percussion.

The patient continued the symptoms of vomiting and diarrhea and on October 26 went into coma about 10 A. M. He was afebrile during his hospital stay. On October 24, creatinin was 5.7 mg. and urea nitrogen 92.6 mg. One urinalysis showed no albumin, occasional leucocytes and no erythrocytes. A blood chemistry just before death showed creatinin 6.2 and urea nitrogen 122.8. X-ray examination of the esophagus was negative. The patient died on October 26, 1930.

Post-mortem report. No edema. No fluid in the serous cavities. Edema and congestion of the lungs with terminal bronchopneumonia. The kidneys together weigh 534 grams; they are markedly swollen and cloudy. Coagulation necrosis of the greater part of the mucosa of the esophagus and the cardiac end of the stomach. The terminal ileum and the entire large intestine show extensive necrosis of the mucous membrane with edema of the walls.

Diagnosis. Bichloride poisoning (bichloride nephrosis; ulceration of terminal ileum and large intestine).

Comment. This case presents the typical appearances of bichloride poisoning. When death occurs several days after the poison was taken, it is almost invariably due to uremia, as in this case. The ulceration and necrosis of the large intestine are due to the fact that mercury is excreted into this part of the bowel. In this type of nephrosis the only edema ever noticed is a slight puffiness of the face.

Autopsy—30—1627.

The patient was first admitted to the hospital on September 13, 1929, when he stated that three days previously he had a sudden attack of sharp pain over the heart. This was the first attack of this kind that he had ever had. Following the attack of pain he had been short of breath and had had a feeling of fatigue. The pain was exaggerated on exertion. For the past year he had had nocturia, six or seven times. He had had frequency during the day, every two hours. He had had pain in the epigastrium for the past thirty-five years. At that time the only thing he can remember is that he had pain in the region of the epigastrium. The pain was not referred and was relieved by taking food. At that time he weighed 200 pounds. For thirteen years after the onset of this trouble he had symptoms referable to his stomach. The only pronounced symptom was pain in the region of the pylorus and duodenum. He was a traveling salesman and during this period he carried crackers in his pocket which he ate at frequent intervals to avoid pain. The attacks were not seasonal.

His first wife died in 1905. He then went to the country and stayed with a sister for one and one-half years. During this time he rested a great deal and drank considerable milk, so that he felt very well while there. He returned to the city and boarded with a friend; the stomach trouble began and lasted about six months. In 1907 he married the second time and for six years had no stomach trouble at all. He was able to eat any kind of food. At this time he weighed 175 pounds. Since 1913 he had not been free from stomach trouble except for a period of a day to a

week at a time. The pronounced symptom was pain one or two hours after eating, and which was relieved by taking food or soda. His weight gradually went down to 152 pounds. For the past ten years it had remained at this figure; in the past six months his weight dropped to 143 pounds. At the time of examination the pain was much worse and nothing relieved it. He had vomited, since entering the hospital, about once a day in the afternoon or evening. He felt better after vomiting. He stayed in the hospital until November 17, 1929. He was treated for duodenal ulcers. At the time of discharge he was completely relieved of all pain.

An electrocardiogram showed an impure T wave and a left ventricular preponderance. The urine was negative. An x-ray showed a nonfunctioning gall bladder and a perforating duodenal ulcer with a Grade 1 retention. The heart equaled 46 per cent. There was some old tuberculosis of the lungs. The surgical service did not think it advisable to operate for the ulcer. The blood count showed the hemoglobin to be 85 per cent; erythrocytes, 4,810,000; leucocytes, 15,950, with 77 per cent polymorphonuclear leucocytes.

The patient was readmitted on February 1, 1930, complaining of pain in the lower left chest for four months, pain in the epigastrium for thirty-five years, and nocturia for one and one-half years. About four months previously he had developed pain in the lower left chest area. The pain was described as though he were grabbed by a clamp and pinched. The pain usually came on while working, one and one-half to one and three-quarter hours after breakfast. The pain was very sharp and he had to stop walking. If he could sit down or lean against something he would do so. Again at about 5 P. M., when he was banking the fire and exerting himself with heavy shovels of coal, the pain would strike him and he would have to stop work until it cleared up. On the way home he would have to stop because of attacks of pain. The pain was sharp and did not radiate down the left arm. He had been short of breath for about one year. The dyspnea was much more marked during the attacks of pain. He never noticed edema of the ankles.

Although admitted because of the pain, he did not have it after entrance to the hospital. He described the pain as something entirely different from the ulcer pain. He noted that he never vomited or had tarry stools. The pain had no relation to meals or kinds of food but was entirely related to exertion. The blood pressure was 140/80 at this time. The urine was negative. Hemoglobin, 68 per cent; erythrocytes, 3,880,000; leucocytes, 8,900 with 77 per cent polymorphonuclear leucocytes. The stomach contents showed 52' free hydrochloric acid and 72' total acidity; there was occult blood and mucus. The Wassermann was negative. An electrocardiogram showed the same conditions as on the previous admission. An x-ray of the stomach showed Grade 3 retention and there was a suggestion of an ulcer high on the lesser curvature. The roentgenologist warned of the possibility of early malignancy. The patient was discharged on May 5, 1930.

He was again admitted May 7 with severe anginal pain. He remained in the hospital until June 12 and was discharged at that time.

He was again readmitted on October 3 complaining of severe pain in the epigastrium following meals for the past three days. The pain came on about three

hours after meals. There was some relief from Sippy powders. During the past three or four days he vomited occasionally with the onset of the pain. The pain did not radiate. He had gained about 18 pounds in weight since last June. There had been no anginal attacks since the last admission. There was no blood in the vomitus and no tarry stools.

Physical examination showed an elderly male of 76 years. The head was negative. The breath sounds were normal. The heart sounds were slightly muffled; there was slight accentuation of the second sound; there were no murmurs; the heart was not enlarged. The blood pressure was 170/90. The abdomen showed mild tenderness over the entire epigastrium. There was no tenderness over the lower abdomen. There were no masses. The patient had severe paroxysms of pain in the epigastrium. Washing the stomach gave no relief. The pain required morphine. He gradually failed and died November 2, 1930.

Hemoglobin, 85 per cent; erythrocytes, 4,550,000; leucocytes, 5,650. An electrocardiogram showed the same impure T wave and a left ventricular preponderance. X-ray showed 25 per cent retention of the motor-meal. The lesion on the lesser curvature was gone but the ulcer of the duodenum remained about the same.

Post-mortem report. No edema. Superficial decubitous ulceration over the sacrum. The heart weighs 414 grams and shows a rather marked coronary sclerosis, involving particularly the anterior descending branch of the left artery. There is no thrombosis. Chronic suppurative bronchitis in both lungs; old healed tuberculosis in the right apex. The gall bladder is normal. Atrophy of the spleen (weight 22 grams). Bilateral chronic pyelitis. Chronic ulcerative cystitis. Stomach normal. Two old duodenal ulcers, each about 5 mm. in diameter, near the pylorus; the ulcers are not perforated. No peritonitis. Rather marked atherosclerosis of the aorta.

Diagnosis. Cause of death, coronary sclerosis.

Comment. The epigastric pain which the patient had had for 35 years was clearly due to the duodenal ulcers. His recent pain was due to coronary disease and this was the cause of his death. The nocturia and increased frequency were due to cystitis and pyelitis.

Autopsy—30—1777.

The case is that of a girl ten years old. From birth there had been dysphagia and inability to retain food. At the age of two years she was operated upon for pylorospasm. The surgeon thought the pylorus was hypertrophied. No relief was obtained from this operation. At the age of eight years gastrostomy was performed, and from that time the child had been fed largely through a gastrostomy tube; also she was still able to swallow liquids. It was noted that she had less difficulty in swallowing when her attention was attracted to something else.

Early in the year 1930, dilatation of the esophagus was done. On November 28 a second dilatation was done under anesthesia. After the operation her condition was poor; respirations 40; pulse 168; temperature 104° by rectum. Hypodermoclysis of Hartmann's solution (300 cc.) and protoclucose of five per cent glucose were given. She became irrational, restless, and had some abdominal rigidity. Chloral and codein were given. Her condition became worse and she could not retain any fluids taken by mouth. The night after the operation

and the day following she vomited a little blood. Some dullness was noted in the left axilla about 24 hours after the operation. Death November 30.

Post-mortem report. Two hundred cc. of clear fluid in the peritoneal cavity; no peritonitis. The left pleural cavity contains about 350 cc. of cloudy greenish fluid; some food particles found in the fluid. One hundred and twenty-five cc. of clear fluid in the right pleural cavity. The heart shows no disease. Hypostatic bronchopneumonia in the lower lobe of the left lung posteriorly; acute pleurisy on the left side. Acute splenitis. Cloudy swelling of the liver. Mediastinal abscess just above the diaphragm and posterior to the esophagus, which has penetrated into the left pleural cavity and given rise to the pleurisy. The lower three cm. of the esophagus is very narrow and its walls are thickened and hardened. There is a perforation on the left side of the stenosed portion which opens into the mediastinal abscess, just described.

Microscopic sections through the walls of the esophagus show no tumor tissue but an infiltration with lymphocytes.

Diagnoses.

1. Congenital stenosis of the terminal part of the esophagus.
2. Perforation of the esophagus, probably resulting from attempt at dilatation.
3. Mediastinal abscess and purulent pleuritis from esophageal perforation.

Comment. The history of obstruction since birth establishes the stricture as of congenital origin. The stricture is largely organic in nature but there is some evidence that a spastic element was concerned.

MENSTRUAL DISORDERS IN ADOLESCENT GIRLS

CHARLES H. LAWRENCE, JR., Boston (*Journal A. M. A.*, Oct. 18, 1930), says that the occurrence of delayed menarche or abnormal menstrual rhythm or flow in adolescent females is indicative of subnormal development of the reproductive organs which is likely to result in diminished fertility during adult life. It is more often due to systemic functional disturbances than to pelvic disease, and to those disturbances insufficiency of the anterior pituitary hormone is the commonest. Spontaneous compensation of such conditions does occur, and treatment is not indicated by slight delay in establishing normal menstruation; but, if that function has not become normal by the sixteenth year, the attitude of optimistic expectancy must be abandoned. In the great majority of these adolescent patients, the symptoms are not due to primary ovarian insufficiency but to some endocrine or nomendocrine systemic condition that renders the potentially normal ovary inert. The commonest of these conditions are focal infection, insufficient protein in the diet, and insufficiency of the anterior pituitary hormone. In series, this oral administration of anterior lobe pituitary substance, in adequate dosage, has given encouraging results in patients in whom the existence of such a pituitary insufficiency was demonstrated.

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North Dakota State Health Officers Association

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W. A. JONES, M. D.
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ANNOUNCEMENT

With this issue we wish to announce to our readers that Dr. S. A. Slater of Worthington, Minnesota, has become a member of the Board of Editors of The Journal-Lancet. We know that our readers will be pleased to hear of this appointment and will enjoy a closer acquaintance with Dr. Slater through this medium. We wish to take this opportunity to welcome Dr. Slater into our circle of Editors and Advisors.

THE PUBLISHERS

MEDICAL ORGANIZATION

The first national medical organization of the United States met with the following objects in view:

First. To direct the policy of physicians as an organization in relation to the public.

Second. Interchange of personal opinion, experience, and ideas for mutual benefit.

Third. Promotion of better fellowship in the profession such as comes through personal contact and acquaintance.

The above furnishes the basis of all state and county medical societies throughout the country.

How many medical organizations have attained that for which they have been launched? Unfortunately a large percentage of physicians have taken little interest in their organization. Many feel that it is the duty of the physician only to carry on in his ministrations to the sick, thinking little of what the organization might offer him

or what he might be able to offer the organization. They feel that by their precept and example the public and the young men who follow them should be guided.

This is, we believe, as it should be. But the future must be judged by the past. Does our past experience justify the assumption that we may disregard intrusions on our profession, or that all within may move along smoothly without readjustment?

With the increase of the pseudophysician, not only has it become more difficult for the public to differentiate the imitation from the real physician, but it has increased the difficulty of the medical profession in purifying its own ranks.

It is quite generally acknowledged today that every trade or profession must be organized to protect its own interests. It has been estimated that the cost of a medical education is at least ten thousand dollars, in addition to the long period of time spent in obtaining it. With over two thousand practicing physicians in the state of Minnesota, we have then, an investment of over twenty million dollars. What business, firm, or institution of this magnitude does not take adequate precaution to insure and protect such an investment? Had our predecessors taken ample precaution to protect the interests of the profession as well as of the public, the public would not today be confused as to the imitation and the real physician.

It has been said frequently that the medical man of today does not hold the respect of the public that he did many years ago. With the pseudomedical man thriving on berating the real physician, is it not reasonable to expect some depreciation in the stock of the conscientious medical man?

How are these matters to be regulated? Must we keep entirely out of politics? When the politicians make the laws to regulate our practice and procedure, as well as the laws for those whom the public are unable to distinguish from us, is it

reasonable that we should have nothing to say about how these politicians proceed?

The prolonged and thorough education of the medical man has fitted him to be a man of influence in his community. The allied professions, dentistry and pharmacy, have kindred interests. The men of these latter professions are also men of respect and influence in their communities. The members of these professions understand the medical attitude and its relation to the public. Both are usually ready and willing to coöperate with us in matters of common interest. With a properly functioning organization of these three professions in county, state, and nation, fair play could almost certainly be assured to these professions as well as to the public whom they serve.

Many of us feel that we have done our part when we have contributed a small amount of money. This, of course, is necessary, but much time and thought, as well as hard and diligent work, is necessary to effect an organization which will accomplish the desired results. The average medical man either feels that it is beneath his dignity or that he is too busily engaged in the practice of his profession to take part in these organizations. The irregular practitioner as well as many of the so-called politicians take advantage of this fact. As a result many laws obnoxious to the physician and to the public are enacted to protect the irregular or pseudomedical man. The legislator even though he be conscientious and intelligent is often not capable of interpreting the meaning of these laws unless translated for him by the medical man. Unfortunately we have some legislators who either through lack of intelligence or some ulterior motive fight for these obnoxious laws.

Properly organized, with every medical man doing his part in conjunction with our allied professions, we have it within our power to expose these practices and put the truth before the public and thus head off such scandalous procedures. The indifference of the medical men of the past to this matter accounts to a large extent for the present situation. Are we going to sit by and allow this same or a worse situation to be passed on to our successors?

The Minnesota State Medical Association, under the leadership of Dr. Herman Johnson, made the most advanced step that has been made in the history of this association. The Basic Science Bill was not all that could be desired, but it demonstrated what can be accomplished with concerted effort under efficient leadership.

The Minnesota State Medical Association of recent years has developed an organization

equaled by few other state associations. That this organization may continue to increase its efficiency and that others may emulate it should be the fondest hope of every physician.

Dr. Shirley W. Wynne, New York City Health Commissioner, recently stated publicly that the medical profession must give the public qualified treatment at reasonable prices or face the possibility of state regulation. Such public utterances from men of his prominence must make us stop and ponder. Are we always giving the public value received? Are we keeping abreast with the advancement of medical science? Are we coöperating among ourselves to the best advantage of the profession and ourselves?

No doubt to get results every organization must have real leaders. But only with the coöperation of every individual can these organizations through their leaders reach their highest efficiency.

We do not look forward to a medical utopia but, with every medical man putting forth an unselfish effort to assist his organization in attaining the coveted goal, we at least may be justified in taking pride in our profession, and leave it with the satisfaction that we have rendered some service to the public as well as to the medical world.

J. M. H.

MEDICAL ECONOMICS

Horse racing as a diversion is yielding to a branch of sport requiring less intelligence than is demanded of a successful horse. The replacing safety valve for overwrought business and professional men is the squared arena featuring "pugs" of standard weights, measures, and degrees of morosity. They are shipped about and fed, watered, curried, and stalled to every minute detail, as was the Bucephalus herd in the inspiring nineties. Such a standard fisticuffer was led by easy stages and bouts from one of our great fresh water lake regions to the Atlantic Coast. While training somewhere in Jersey, he saw the ocean and expressed a desire to swim. He spit about in the unnatural medium and came out "raging mad," "another frameup, some lout had put salt in the water" just to annoy him! His remarks were overheard by a representative of an Eastern bond house; he was immediately made one of their "financial advisers."

And so, good readers (in sweetest radio style) we sign off saying, "Goodbye to this little story and also to our investments."

E. L. T.

PAIN OR HYSTERIA?

Of all the symptoms which impel patients to consult a physician, the one most frequently encountered is pain. In the vast majority of cases it is the outstanding symptom. The idea of the association of pain with disease is so firmly fixed, that many persons will neglect themselves and permit a disease to reach an advanced stage, through a false sense of security due to the fact that in its early stages the disease had not been accompanied by pain. That this is a perfectly natural inference will be recognized, when we consider that practically every disease or abnormal condition of the body presents the symptom of pain at some time during its course. Such statements as these are so trite, and the truth in them so commonly recognized, that they are almost axiomatic, medical truisms, and to use space for reiterating them would, at first thought, seem to call for an apology. Therefore, a few cases will be cited briefly with the hope that they may justify the use of time and space for referring to the subject.

A woman in the forties complained of uterine bleeding, and examination revealed a carcinoma of the cervix, which was treated with radium. Within a few months she began to complain of pain in the back. She was carefully examined by specialists in various lines, including neurology and gynecology. No physical evidence of disease being found, the case was regarded as one of hysteria. Active and passive exercises were prescribed and the patient was required to get up and take her own bath, against all of which she complained bitterly. At the autopsy which was performed a few months later, extensive cancerous metastases were found in the bones of the spine and pelvis and in the upper extremity of one femur.

A woman in middle life had a small mole on the vulva. This was removed and examined by expert pathologists who pronounced it a benign growth. Two years later, the patient began to complain of indefinite pains in various parts of the body and general weakness and malaise. She was under observation of competent physicians for several weeks, and, no organic trouble being found, the diagnosis of neurasthenia was made. A small inguinal gland which was at first regarded as unimportant was later removed. This was found to be a melanosarcoma, and the patient died a few months later with generalized metastases.

A middle-aged man complained of pain in the loin, at times extending into the groin and scro-

tum and upper part of the thigh. He was examined repeatedly at various places, including some well-known clinics in Minnesota, and by various means, including cystoscopy and X-rays. No cause for the pain was found, and it was thought that he was exaggerating his symptoms. At operation, performed several weeks later, an immense retroperitoneal abscess was drained, the origin of which could not be definitely determined. After the operation the patient continued to have attacks of pain, which had the characteristics of angina pectoris.

It is not the purpose of the writer to call attention to mistakes in diagnosis or treatment committed by members of the medical profession, for that function has been taken over enthusiastically by the lay press, in which the whole profession is gleefully damned for the sins of omission or commission of a few of its members. But we can afford to run the risk of furnishing some ammunition for our critics if some patient, though it be only one, can be saved from the maltreatment, physical and psychic, that results from a mistaken diagnosis. It must be admitted that pain is a subjective phenomenon, and the recognition of its presence or absence must depend upon the statements of the patient. The various definitions of pain reveal its intangible nature. One author defines it as "a mental interpretation difficult to describe strictly." Another—"It is the interpretation of some abnormal and generally harmful process which is occurring in the organism." "Pain, as well as its antithesis, pleasure, is the result of mental activity." "It is a beneficent reaction against threatening forces," "a mental state due to the perception of an injury to the body." These various attempts at definition dwell upon the psychological aspects of pain. In this they agree with the older writers, and it is interesting to observe that in cases in which pain is ascribed to hysteria or neurasthenia, the diagnosis is based on the same conception of pain as that of the ancients who considered it only as a metaphysical phenomenon.

It cannot be denied that the psychic element plays an important part in the production of pain and in its severity. Advantage was taken of this fact during the Inquisition when the instruments of torture were paraded before persons who disagreed with the party in power on a religious or political question, in the expectation that the sight of them would cause the accused to recant their heresies. Some persons under the influence of religious ecstasy are said to have become insensible of pain; while others suffer acutely before

any physical injury has been inflicted. Nevertheless, modern physiology stresses the physical basis of pain, and regards it as "Either the result of lessened nutrition of the cell, or as the indicator of the reaction against whatever tends toward the destruction of the organism." In the consideration of a case presenting pain of obscure origin or without demonstrable physical cause, some physiologic laws should be borne in mind. The brain has learned that a stimulus coming through a certain channel commonly originates in a certain area of the periphery, and therefore will interpret a stimulus applied to the course of a nerve as having come from that peripheral distribution. According to Head's law, "Where a painful stimulus is applied to a part of low sensibility in close connection with a part of much greater sensibility, the pain produced is felt in the part of higher sensibility, rather than in that of lower sensibility to which the stimulus is actually applied." Instances of reflected pain, and of the phenomenon of allochiria, in which a pain orig-

inating on one side of the body may be referred to the symmetrical area of the other side, are not uncommon. Urologists emphasize the danger of making a diagnosis according to the side to which pain is referred, for pain due to a stone in the right kidney may be referred to the left.

These considerations can be merely mentioned here, and there are many others with which all physicians are familiar. Attention is called to them in the interest of patients such as those referred to above. The diagnosis of hysteria as an explanation for pain is almost never justifiable, and if it has been made, it should be rejected until all the evidence has been carefully reconsidered and all other possible causes excluded. If, after that, the diagnosis of hysteria is made, it should be with reservation, and in full expectation that time will demonstrate its fallacy. The conclusion should never be drawn that pain does not exist because the examiner has been unable to find any organic cause for it.

S. H. B.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of December 10, 1930.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, December 10, 1930. Dinner was served at 7 o'clock and the meeting was called to order by the President, Dr. Emil S. Geist. There were fifty-one members present.

Minutes of the November meeting were read by the Secretary and approved as read.

The following officers were elected for 1931:
President—J. S. Gilfillan, St. Paul.

Vice President—J. C. Litzenberg, Minneapolis.

Secretary-Treasurer—R. T. LaVake, Minneapolis.

The scientific program was as follows:

DR. HILDING BERGLUND (Minneapolis) reported a case which had been seen at the University Hospital at various times over a period of three or four years, in which various diagnoses had been made.

DISCUSSION

DR. E. L. GARDNER (Minneapolis): This is an extremely interesting case. I have been following since the spring of 1927 a somewhat similar case. The patient is a nurse, 40 years of age, who came into the office with the support of two friends. She had com-

plained of stiffness of the muscles and joints, with various aches and pains which had been recurrent since 1917. In 1921 she began to have diarrhea with six or eight stools a day. She has been having recurrence of the diarrhea and stiffness throughout the body with the approach of spring each year, while in the fall and winter her symptoms are usually very slight. She had given no history of redness of the joints, has no fever, and claims that the soreness was generally distributed not to the joints alone but all over the bony skeleton. She has noticed that there was free oil in the stools which floated upon water. Her diet has always been an excessive vegetable one. She has become extremely irritable, some muscle twitching, and has been considered as a case of nervous prostration.

Upon examination we found a very frail young woman, under ninety pounds in weight. The skin was rather pale, muscles flabby, gait very difficult because of an extreme spasm of the spinal muscles and upper thigh muscles, especially the adductors of the thigh, whenever she attempted to walk. The positive findings were spongy gums with soft teeth, negative chest, and upon examination of the extremities there seemed to be an intense tenderness over the bones upon pressure and not limited to the joints. The muscles were extremely spastic and irritable, although we could not demonstrate any of the symptoms of true tetany. The abdomen showed general tenderness, especially over the colon. The nervous examination was entirely negative. There was no decrease of vibration sense. There was a complete achylia gastrica. The hemoglobin ranged

between 50 and 65 per cent but there was no abnormal condition of the red blood cells except hypochromasia, and the hemoglobin index was well below one. There were no changes in the blood to suggest pernicious anemia. The stools were strongly acid in reaction, of waxy color, and contained a large quantity of neutral fat which stained with fat stain. There was also a marked excess of undigested meat fibres and starch granules. The blood chemistry showed a calcium of 8.8, but a normal VanSlyke. The X-ray examination showed a normal stomach except for hyperperistalsis, and there was hypermotility all along the digestive tract. The gall bladder filled poorly after tetraiodophthalcin. One very important feature of the case was that it was almost impossible to show the bone on X-ray films because of the lack of shadow producing quality, which was interpreted as probably due to a withdrawal of calcium phosphate.

The progress of this case was extremely interesting. Since we were unable to make a definite diagnosis as to the condition, but since we believed that many of the symptoms were not due to arthritis but due to decalcification of the bone, and since the patient apparently was losing so much calcium by the diarrhea, we put her on a diet which would produce the nearest to normal stools. She was given a diet with restriction of starches, but containing rather large quantities of butterfat. All the vegetables were finely divided and she was given rather large quantities of protein. She was also given large doses of calcium carbonate and calcium phosphate, sufficient to hold down the diarrhea. Under this management, as well as the exposure to sunlight, the stools became formed and free from undigested food particles. Within six months after treatment the patient was able to be up and about, and during the past three years has been able to be a public health nurse in one of our largest department stores. She has had no recurrence of her trouble, but is still very careful to maintain normally formed stools as well as to maintain her nutrition.

An X-ray examination of the bones more recently shows them to be perfectly normal. There was no arthritis and no deformities.

This case also seems to be one of decalcification of the bone, probably secondary to a gastrointestinal lesion which prevented the proper absorption of calcium salts and caused their withdrawal from the bony skeleton. We have in this case a blood calcium slightly below normal which returned to normal after a period of three months. And also we had in this case a muscle irritability and muscle spasm. The VanSlyke was always normal and we could not demonstrate a true spasmophilia.

Both Dr. Berghlund's and my case are interesting for speculation, but it seems very probable that the withdrawal of calcium from the body by a chronic diarrhea was an important factor in producing the symptoms.

DR. JAMES JOHNSON (Minneapolis) read his Thesis, entitled "Acute Mechanical Obstruction of the Lower Bowel, with an Analysis of 36 Personal Cases." Lantern slides were shown.

DISCUSSION

DR. A. R. COLVIN (St. Paul): I am not quite clear as to Dr. Johnson's classification of high and low obstruction. Of course, we all readily recognize the fact that the higher up in the small intestine the obstruction

occurs the more dangerous it is. The classification that I like to carry in mind is whether the obstruction is of the large bowel or of the small bowel.

An English surgeon reported all the cases operated on at one of the large London Hospitals, over 900 cases. His study led him to believe that it was almost fatal to attempt to do any radical surgery in acute obstruction. Enterostomy, of course, as Dr. Johnson has done it, is a life-saving procedure. In obstruction of the colon from the cecum on, I believe the life-saving procedure is cecostomy. It is sometimes a question as to how cecostomy or enterostomy should be done.

The cecum seems to bear the brunt of the distention; obstruction anywhere below the cecum is attended by greater distention of the cecum than any other part of the large bowel. Indeed, in a neglected case we may find ulcers in the cecum without finding ulcers anywhere else. I think if the cecum is very greatly distended and the patient is very sick, even a little nick made to put a catheter in may allow just enough contents to escape to spoil the whole game and the patient may die of peritonitis.

The procedure I like best is, under local anesthesia, to expose the cecum so that a sufficient area can be used to suture to the peritoneum. If not sewed to anything more than the peritoneum, the opening will almost invariably close. It is difficult to sew this without penetrating the distended cecum, but it can be done and in that manner one can wall off a portion of the cecum enough to definitely relieve the obstruction. It is very rare, of course, that one can't wait a few hours before opening the cecum. It is best to wait four or five hours if possible, because it is surprising how much gluing of the peritoneum has occurred, and there is no danger then of infecting the peritoneal cavity. The relief on opening is almost immediate. It is fatal to try to do a resection in acute obstruction.

The diagnosis of intestinal obstruction in the large bowel is a very interesting subject. For instance, I saw a woman about a year ago who was brought into the hospital with a very high temperature and in a great deal of pain. Her symptoms were those of obstruction existing only a few hours. It is very rare to have an elevation of temperature in early obstruction. However, on giving barium, an obstruction was found in the region of the splenic flexure. Cecostomy was done at once and the patient relieved. On account of the location of the obstruction it was thought that it was due to carcinoma. After relieving these patients by cecostomy, there is no hurry for further operative procedures. A few weeks do not mean much compared to the safety of the patient, insured by giving the bowel time to recover its tone. Later on, in this woman's case, there was found to be a carcinoma of the splenic flexure, and the temperature, I believe, was due to an infected carcinoma. I believe this is comparatively common in carcinoma of the colon. In carcinoma of the colon the supervening obstruction is often due to an inflammatory thickening superimposed upon the carcinomatous region. After the relief of the obstruction, it takes quite a while for this edema to subside, but it frequently does. In this particular case the conditions were interesting because about a week after I had done the cecostomy she complained one day of a good deal of pressing down pain in the rectum. I had examined her digitally after relieving her by cecostomy

and the rectum was empty, but later, at the time of the complaint of rectal pain, I found that she had a fecal impaction in the rectum. Following the cecostomy the relief of the edema had been sufficient for the feces to travel through the carcinomatous mass and fecal impaction occurred. Undoubtedly in these narrow strictures due to carcinoma, the liquid content of the upper colon can seep through the stricture and, becoming inspissated lower down, become well-formed masses.

DR. A. T. MANN (Minneapolis): I want to compliment the essayist on the very fine way in which he has handled this subject and given us his observations. I notice in the list of his chemical changes of the blood, that he has acidosis down. It seems to me that in nearly all the cases in which vomiting has occurred to an extent to produce chemical changes, we have an alkalosis which is a much more dangerous thing than acidosis itself. We have, with these changes, the kidney changes shown very definitely in the blood chemistry by a high urea content and often by albumin and casts. So that we have two or three different things to consider in deciding on the treatment for an intestinal obstruction: there is the obstruction itself, and what we shall do for the toxemia, the dehydration, the alkalosis and high urea percentage. The sodium chloride in the water has seemed to have a marvelous effect in straightening out these conditions. It helps the dehydration, of course, and it has a very marked effect on the alkalosis.

It is more of a problem just what the glucose does, and, as nearly as I can get at it, its effect on the kidney itself is to help the kidney straighten out by its diuretic effect, because if we have an alkalosis it is not logical to put in sugar for the alkalosis itself, so it certainly must do something else, and its effect on the kidney in helping it to do its work better may explain some of its value.

In the operative field, in the late cases we must be very careful about limiting the extent of surgery as much as possible. Enterostomy should be employed more than it is, and, in the later cases, very often nothing else should be done. Holden not only does that in practically every case, but he disembowels the patient and with the aid of an assistant he actually strips the bowel, from the top down, between his fingers which he first smears with vaseline. But that never seems to me quite a proper surgical procedure on account of the shock. We know that the handling of the bowel is one of the things which causes shock in a most marked degree, so that I believe that surgeons in general do not think it is best to do it.

I think the essayist is greatly to be congratulated on his work.

DR. A. E. BENJAMIN (Minneapolis): I have been very much interested in this paper. It seems to me the first thing one should do is to make a diagnosis of where the obstruction is and what the causes are. We know that if the obstruction is in the small bowel the treatment is different than when in the lower bowel. If due to bands of adhesions in the ascending colon, a right sided incision (as in appendicitis) relieving the obstruction is all that is required. If the obstruction is in the descending colon or sigmoid due to diverticulitis, the treatment must necessarily be different. When due to diverticulitis or carcinoma of the sigmoid or colon, a colostomy may be necessary. In certain forms

of diverticulitis producing acute obstruction, a colostomy may be done by simply bringing the colon up through the abdominal incision, passing a fascial strip through the mesentery for support, and when the inflammatory obstruction subsides this strip may be cut and the colon replaced in the abdomen. The colostomy will narrow as the colon functions, or it may be closed by an operation.

If there is much vomiting, a gastric lavage should be performed at frequent intervals to remove the toxic substances. When the bowel is distended from gas and contents, there is a transmigration of infectious micro-organisms through the walls of the intestines and a peritonitis may supervene. The gastric lavage reduces the distention and the patient may be relieved of the obstruction. Regurgitation of infectious material in the bowel to a higher level which the upper intestinal tract is not used to harboring, may be responsible for a toxic state. In case of a distended cecum, I prefer to use a hypodermic needle of large caliber to empty the colon of the gaseous material when the bowel may be brought up into the wound and a cecostomy more easily performed. Washing the bowel out at frequent intervals through a colostomy opening, reduces the toxic substances and overcomes the distention. It also prevents dehydration.

If we can make the diagnosis in the first place our incision can be made with more certainty of overcoming the condition. Resection, of course, should be performed only in old, chronic, small, carcinoma, simple obstructive cases or acute mesenteric thrombosis.

DR. JOHNSON (in closing): I wish to thank all of the doctors who took part in the discussion of this thesis.

Dr. Colvin's question in regard to the classification of high and low obstruction is undoubtedly well put. The obstructions reported here are all in the lower ileum and colon. High obstructions would be considered those in the pylorus, duodenum and jejunum. I do not know that one can draw an arbitrary line as to what would be high and what would be low except from a general understanding. Dr. Colvin and Dr. Mann both mention cecostomy in the presence of obstruction from malignancy in the colon. The cases reported here causing obstruction were all in the descending colon, where they could be brought out and a tube put in the proximal loop. However, as a general rule, it is very necessary before ever attempting a resection of a malignancy in the colon to do a primary cecostomy, and allow the patient to overcome all of the symptoms of an acute obstruction before attempting the major procedure.

The blood chemical changes in the reported cases have, I believe, almost entirely been alkalosis. In fact, it is very rare now that one ever sees any marked chemical changes of either alkalosis or acidosis because they occur only in neglected cases. Dr. Mann mentions the danger of stripping the bowel in cases of obstruction. There are some cases in which this can be done to great advantage, but it should be done with a great deal of care. In other cases where the bowel is very friable and where undoubtedly leakage has occurred, it is no doubt advisable not to do this procedure. I believe this should be left, like many other things, to the individual judgment of the surgeon.

R. T. LAVAKE, M. D.

PROCEEDINGS MINNEAPOLIS SURGICAL SOCIETY

Meeting of January 6, 1931

The regular monthly scientific meeting of the Minneapolis Surgical Society was held in the lounge of the Hennepin County Medical Society in the Medical Arts Building on Tuesday evening, January 6, 1931, at 8 o'clock.

The meeting was called to order by the President, Dr. A. T. Mann. There were 25 members and 9 visitors present.

The President announced the Annual Meeting and Banquet which would be held on the evening of February 5 at the Nicollet Hotel.

The scientific program was as follows:

DR. IVAR SIVERTSEN reported a case of "Exophthalmic Goiter Complicated by Pregnancy."

A case of exophthalmic goiter complicated by the presence of a pregnancy is always interesting, especially in view of the divergence of opinion held by the profession. Gillharn stated that "a woman with exophthalmic goiter should not marry; if she marries, she should not become pregnant; if she becomes pregnant, she should be aborted." Strause, Falls, Mayo Clinic, and Lahey Clinic have claimed there was no evidence that pregnancy influenced the course of exophthalmic goiter. Since the use of Lugol's solution became popular in 1923, preliminary ligation ceased to be used to any extent, and the Mayo Clinic and the Lahey Clinic find that patients with exophthalmic goiter, although pregnant, may be treated medically and surgically with no more risk than in the nonpregnant case. Many obstetricians prefer conservative treatment during pregnancy to be followed by surgery after delivery. In either case the effect on the newborn is the same—nil.

In support of the view that a case of exophthalmic goiter becoming pregnant may be operated upon without injury to mother or child, the following case was presented:

No. 30762, Mrs. A. G. N., housewife, aged 39, born and raised in this vicinity, the mother of three children (the youngest of whom was five), noted an enlargement of her neck about a year prior to her first visit to the clinic. She had noted in the last five months increasing nervousness, weakness, profuse perspiration with tachycardia and palpitation, loss of weight in spite of good food intake. There were no gastrointestinal symptoms. She had not menstruated

for two months.

Her family history disclosed the fact that her father, mother, a brother and two sisters were living and all were well except her father, who had a cancer of the lip. She had always been in good health prior to the last year.

Examination on June 7, 1929, disclosed evident loss of weight, thyrotoxic appearance, an enlarged thyroid, moderately soft, with bruit present. The blood pressure was 160 systolic, 70 diastolic; temperature 98.6°; pulse 134; heart normal except for rapidity, lungs clear, abdomen normal, teeth and bones normal. The uterus was enlarged, cervix softened, adnexa normal. Hemoglobin was 80 to 85 per cent, R. B. C. 4,800,000, W. B. C. 8,400. The urine contained one plus sugar, a trace of albumin with a few white cells, epithelial cells and bacilli. Meinecke was negative.

Diagnoses were (1) exophthalmic goiter, (2) pregnancy.

Hospitalization was recommended. The patient entered Fairview Hospital June 10, 1929. The basal metabolism was plus 74 per cent, and when checked four days later was plus 76 per cent. She was placed on light diet, Lugol's solution, MM. X, p.c., ice locally, and bromides. History was then elicited that the patient, while ambulant, took Lugol's solution seven weeks prior to admission to the hospital. The tremor subsided and the general condition improved so that Lugol's was discontinued after eleven days in the hospital. Four days later the right superior thyroid artery was ligated under novocaine, without distress. Four days later the left superior thyroid artery was ligated under gas anesthesia, without distress. Six days later Dr. S. R. Maxeiner was called in consultation, and reported as follows: "The patient was seen in consultation with Dr. Ivar Sivertsen at 5:45 P. M., July 5, 1929, at Fairview Hospital. The history and physical examination, as recorded by Dr. Sivertsen, and the hospital records were reviewed. The patient's general checkup of hyperthyroidism was made. The patient is running a pulse of 135 and the blood pressure is 135/60, with marked tremor, exophthalmos, and palpable thyroid. Pelvic examination was not made, but Dr. Sivertsen states that the patient is more than four months preg-

nant. "I agree absolutely that this is a case of exophthalmic goiter, and that surgery will be the natural treatment in her case. In spite of the fact that the patient is pregnant, the pregnancy is so early that we have no assurance that the patient will not abort and the pregnancy be naturally discontinued because of her thyrotoxic condition. As a result, I believe that the patient herself is the most to be considered in this particular instance, and that surgery should be employed as soon as indicated. I would suggest that the patient be given large doses of Lugol's for a few days in an effort to slow the pulse and possibly put her in better condition for operation. If she does not respond to treatment, it may be necessary to resort to surgery in view of the fact that she is losing weight rapidly. (Signed) Dr. S. R. Maxeiner."

Eight days later, during which time weight loss and tachycardia had continued, a thyroidectomy was performed under novocaine and ethylene anesthesia. Her postoperative convalescence was uneventful. She sat up on the tenth day and left the hospital on the sixteenth day postoperative.

The laboratory diagnosis was toxic adenoma.

One month postoperative, the patient had increased in weight and strength and felt well; the pulse was 80, and the pregnancy o. k. Three months postoperative, the weight continued to increase, the blood pressure was 140/80, and the pregnancy o. k. Nine months postoperative, the patient reports that a normal baby was born five and one-half months postoperative. The delivery was normal, and conditions normal. Nineteen months postoperative, the patient's weight was 144 pounds (formerly 114 pounds), and she was well and healthy.

DISCUSSION

DR. E. K. GREEN said that Dr. Sivertsen's case, with his modern up-to-date treatment, reminded him of a case which he had seen with the late Dr. L. A. Nippert about twenty-nine years ago. The patient was a woman about 40 years of age, with all the physical signs and symptoms of a marked Graves' disease, who had come to full term with nothing but symptomatic treatment. The exophthalmos was extreme; she had a large thyroid, very fast pulse, and was very nervous. The family was desperately poor, and while Dr. Green gave the chloroform (in a small 10x12 bedroom) Dr. Nippert had delivered a perfectly normal baby that was stillborn because of a protracted difficult labor. Somewhat to their surprise, the patient made an uncomplicated recovery from the labor.

DR. GREEN added that the patient has never had surgical interference, and when he saw her about two years ago, while she was in rather poor health, she was able to get about and do her housework.

DR. A. A. ZIEROLD asked how a diagnosis of toxic adenoma could be made in the laboratory.

DR. MARTIN NORDLAND was of the opinion that it is characteristic that pregnancy has a tendency to aggravate the usual toxic symptoms of the thyroid, and if

this were toxic adenoma it would perhaps account for the high basal reading of 74. The incidence of toxic goiter in pregnancy, according to Mayo, is 0.6 per cent. Pregnancy usually lights up the symptoms of toxic goiter, and he recalled a case where these symptoms subsided and the patient got along relatively well after the pregnancy ceased.

DR. J. M. HAYES asked if the basal metabolic rate had been checked up after delivery and, if so, what it was.

DR. SIVERTSEN stated that he did not take it afterwards. As far as the laboratory diagnosis of toxic adenoma was concerned, which DR. ZIEROLD questioned, DR. SIVERTSEN had not accepted that. His own diagnosis in the case was toxic goiter. As to pregnancy in goiter cases, it is known that pregnancy increases the metabolic rate and pregnancy increases the toxicity of the gland. Lahey's figures show only 0.4 per cent, while Mayo shows 0.6 per cent of hyperthyroidism in pregnancy.

DR. A. T. MANN said, in relation to DR. ZIEROLD's comment, that if the laboratory men looked at the mass that was taken out and found an encapsulated mass they would feel that it was an adenoma.

DR. ZIEROLD said some one asked if this was a toxic adenoma or exophthalmic goiter. He felt there was no question about the accuracy of the laboratory diagnosis of adenoma of the thyroid or of Graves' disease, but he did not know of any one yet who is able to make a diagnosis of toxic adenoma under the microscope.

DR. R. C. WEBB read a short paper and reported a case of "Hyperthyroidism Complicating Diabetes Mellitus" (Published separately).

DISCUSSION

DR. R. F. MCGANDY stated that he had heard two very interesting case reports this evening, but that he was just now interested in another phase of the subject and would appreciate an expression of opinion from DR. WEBB or DR. SIVERTSEN (or any of the members) concerning, in particular, the causative factors in hyperthyroidism, and whether or not one could justifiably say that nervousness or some emotional strain could cause hyperthyroidism. He was not referring to a pre-existing hyperthyroid which was aggravated by these factors, or to a pre-existing nervous system which the excitability may have precipitated. But he would like to have an expression as to whether one could say that some nervous shock, such as might follow an accident, could cause hyperthyroidism.

DR. WEBB suggested that several of the members present had had experience with hyperthyroid cases, and if any of them had been associated with trauma he would like to hear of their cases.

DR. MANN stated that it is well established in the literature, and all the men had been getting it in lectures for years, that shock is one of the manifestations of hyperthyroidism.

DR. MCGANDY said this really was quite a question. He had recently seen three cases in which this had been a disputed point. While it was true that this had been taught as a cause of hyperthyroidism, DR. MCGANDY felt that authors in recent years had been evading this phase, and only today he had read an article by a man who also seemed to evade the issue but placed nervous shock in the group of hereditary factors. DR. MCGANDY would grant that an accident might precipitate the condition in one who had an inherently unstable nervous system; but could it do so in a person who is normal?

DR. W. P. HERBST related some work which, however, was not conclusive because it was not completed. A man by the name of Duranti had made serial sections

in the cervical sympathetics in exophthalmic goiter and reconstructed them in models. He was working on the theory that the amount of chromatin granules in the cervical sympathetics had something to do with exophthalmic goiter. On that basis one could figure out that shock might play a part in the production of exophthalmic goiter, by the result of psychic shock on the sympathetic system.

DR. MANN said that it is very definitely known that the chromaffin system, of which the cervical sympathetics are a part, has a very considerable influence on the activity of the thyroid gland. DR. MANN was of the opinion that they were "begging the whole question." Of course if the person had no hyperactivity of the goiter before the shock and had it after the shock, then the shock would be the immediate cause of the upset in the whole complicated system, which might have been started in some other way under other conditions.

DR. HAYES said, in reference to DR. MCGANDY'S discussion of these cases in court, that it was usually pathetic and humiliating to the honest physician to go into court and tell what he knew about the cause of hyperthyroidism, before a jury and an attorney who was attempting to discredit his testimony. No physician can honestly make a definite statement as to the factor injury or accident is in these cases.

DR. NORDLAND felt that the members were confusing the terms "cause" and "influence," as no one knows the cause of exophthalmic goiter. An accident might influence and cause an exacerbation of the symptoms of a toxic goiter in a patient who already has this disorder. He felt that the subject was getting highly theoretical when one considers the cause of thyroid disturbance. Boothby claims that in the average human being there is constantly about 10 mg. of thyroxin present all the time, and from 2 to 4 mg. of this is used up each day. Of course there is some mechanism present in the body by which this thyroxin is renewed. It has been considered that the center which controls the production of thyroxin may be somewhere in the brain. If this is true, it is theoretically possible for an accident to aggravate this central control of thyroxin production. DR. NORDLAND felt that one could not talk with any degree of certainty about the "cause" of exophthalmic goiter.

DR. MANN believed that this (the cause of exophthalmic goiter) comes from more than one direction; something which influences the pancreas, or the adrenals and the chromaffin system, or something which influences the gland itself can do it. Of course the whole thing is under sympathetic nervous control more than anything else, but this can be strongly influenced by cerebral impulses of certain types.

DR. WEBB stated he did not believe that hyperthyroidism could be attributed solely to an accident. The cause of this disease is not known, but the present assumption is that a pre-existing state was present and that, given such a disease as influenza or other factors, the disease occurred as an exacerbation.

DR. ARTHUR L. HERMAN read this Thesis entitled "Double Branchial Cysts Complicated with Carcinoma of the Larynx" (Published separately.)

DISCUSSION

DR. JAMES JOHNSON felt that this thesis was a very interesting one. It was particularly interesting to him

since in 1926 he had read a paper on this subject before the State Medical Society in which he had reported five cases. None of them, however, were malignant. He stated that the second and third branchial clefts were the ones in which there were most often embryologic defects and remnants. The second cleft, which empties into the tonsillar fossa, and the third cleft, which enters into the pyriform fossa, were the two involved in DR. HERMAN'S case. Most often the cyst developed from the outer side of the cleft. However, in this particular instance it apparently developed from the ectoderm and pushed in through to the inside of the larynx. This is an exceedingly rare thing, and especially to have such a remnant in this location malignant is indeed a rare situation. DR. JOHNSON felt that DR. HERMAN should be complimented on the care with which he prepared this case.

DR. HAYES asked if DR. HERMAN stated or had any definite figures as to the percentage of branchiogenetic cysts that had become malignant.

DR. MANN said that of course the inner attachments of these branchial cysts or sinuses are always high in the neck, because the mandible or lower jaw itself is in the first arch and the ear drum closes the first cleft, so it makes us jump to the second at least. The styloid process, the digastric muscle, and the little horn of the hyoid bone to which it runs are in the second arch, and the hyoid body and the greater wings of the hyoid are in the third arch, and the fourth (there is no fifth in the human) gives rise to all the structures of the neck below this. Sometimes one may find the cysts running deep, but over the digastric muscle and styloid process when it arises from the second cleft, and running under the belly of the digastric muscle but over the great wing of the hyoid bone when it arises from the third cleft; and it is known that most of them arise from the second and third clefts. And of course with these solid growths there will be the question of dermoid inclusions, so when the tumors are of mixed cells they are spoken of as dermoids. DR. MANN thought it was very rare to have two branchial cysts in the same person.

DR. NORDLAND said that he did not understand the explanation DR. HERMAN made for the loss of voice in this case. He believed that the pathology described was too high to affect the recurrent laryngeal nerve.

DR. HERMAN stated that there were two cysts, one fairly high, but which might cause some pressure on the vagus at least. The other cyst was low enough to cause pressure on the inferior laryngeal nerve.

DR. NORDLAND stated that he did not believe that pressure on the vagus alone would affect the voice.

DR. HERMAN said that in this particular case the aphonia was much more apt to be due to pressure from the cyst within the larynx.

In answer to DR. JOHNSON'S question, DR. HERMAN said that while he had no way of absolutely establishing the location of the cyst, he could only state in agreement with DR. PHELPS and DR. SPRATT, who had seen the patient, that the cyst was in the pyriform recess. The lower external cyst was also at this same level.

In answer to DR. HAYES' question as to the percentage of branchial cysts which become malignant, DR. HERMAN stated that this information was very difficult to obtain from the literature, because of the fact that many authors undoubtedly included malignancies which did not have their origin in branchial cysts. Thus some authors included cases which were mixed tumors of the parotid. Others included cases where the possi-

bility of an overlooked primary lesion in the nasal sinuses or larynx had not been properly ruled out.

In this connection he mentioned a case that was thought to be a malignancy of a branchial cyst, whereas at autopsy the primary lesion was found to be a minute carcinoma in the larynx. In other cases the primary lesions were found in the nasal sinuses. If autopsies had not been performed on these cases, they would have gone into the literature as branchiogenic malignancies. So, both because of failure of all cases to be autopsied, and because of lack of agreement as to just what constitutes a branchiogenic tumor, the figures in the literature are too high.

DR. MANN asked DR. HERMAN when the diagnosis of carcinoma was first made; whether it was on the first biopsy.

DR. HERMAN said it was not made until the second biopsy.

DR. MANN asked as to the type of carcinoma.

DR. HERMAN stated that it was squamous cell.

DR. MARTIN NORDLAND read a paper, illustrated with lantern slides, entitled "Increased Susceptibility of the Hyperthyroid Patient to Air Embolism, with Experimental Evidence."

DISCUSSION

DR. ZIEROLD felt that every one present would agree that this was a most excellent piece of work that DR. NORDLAND had done, and that he should be extended the appreciation and thanks of the members for bringing it before the Society tonight. He felt that it was an unusual observation, and that it was interesting to note how DR. NORDLAND's observations conform to what are apparently unrelated observations on thyroid patients. He thought probably an extension of the series might do away with the false impression created by the record of the last animal in the experiments, as the curves all seemed regular up to that point.

DR. ZIEROLD called attention to the fact that the pulse pressure in the animals increased with the increase of dosage of thyroprotein; that, of course, conforming to clinical observations in hyperthyroidism. He also mentioned an interesting observation of the end results in hyperthyroidism noted by DR. E. T. BELL. Recently he had examined at autopsy an untreated case of exophthalmic goiter, the only unusual finding being a generalized hypertrophy of the heart, apparently the same picture found in the other extreme, which is myxedema. DR. ZIEROLD stated that the premise on which DR. NORDLAND's work is based is very clear. It would seem from the recent studies that there is a weakened heart muscle in the later stages of hyperthyroidism. If that is the case, DR. ZIEROLD felt that any mechanical disturbance, such as air embolism, interfering with the function of such a heart would cause the death of the animal sooner; and this is in accord with DR. NORDLAND's findings.

There was one suggestion which DR. ZIEROLD said he might offer which might add to the accuracy of the observations, and that is to obtain the weight of the heart; checking the amount of air in proportion to the weight of the heart, as being a truer measure rather than the weight of the dogs.

DR. E. A. REGNIER asked DR. NORDLAND whether or not he had noticed any embolic changes in the coronary vessels of the heart, and mentioned recent work by Rukstinat (*Jour. A. M. A.*, Vol. 96, No. 1, Jan. 3, 1931),

whereby he had injected air into the coronary arteries of dogs, with post mortem findings similar to those found by DR. NORDLAND. DR. NORDLAND mentioned that death seemed to be due to a mechanical obstruction of blood flow to the right heart and DR. REGNIER felt there was a possibility that embolism of the coronary vessels may have been brought about by his procedures.

DR. JOHNSON asked how rapidly this air was injected; whether it was injected slowly, or a given amount of air was injected in a given length of time.

DR. LEO MURPHY asked how often in their experience the members had seen air emboli. He had read about it (particularly in the foreign literature) and had heard about it, but he had never seen it, and was interested to know how many of those present had had any experience with air embolism.

DR. MANN stated that he had never seen one. There had been a good many operations at the Boston City Hospital when he was house surgeon, but he had never seen one there nor in private practice. In connection with DR. MURPHY's remark about seeing more of them reported in the foreign literature, DR. MANN stated that it might be due, partially at least, to their method of operating; and then they have much larger goiters as a rule.

DR. W. A. HANSON said that in reviewing the literature of thyroidectomies, air embolism has occurred few times in this country. Probably cases have occurred which were not recognized as such. DR. J. PEMBERTON in a review of the cases at the Mayo Clinic to 1924, states there was probably one case of air embolism which was recognized at the time of operation in 14,911 resections, and with only three deaths recognized to be due to pulmonary embolism.

DR. E. T. EVANS said that when speaking of "air embolism," one must remember that a good deal of air can be put into the jugular without causing death.

DR. WEBB wondered if among the large number of cases mentioned there were any that died during or shortly after operation, and, if so, were they autopsied? He himself had had one case in which he would never have known the cause of death had he not succeeded in getting an autopsy. DR. WEBB was of the impression that there must be a definite condition present in or about the vein which has been cut to permit the air to enter, and that this was a very important factor. He recalled a man he had picked up while riding the ambulance in New York. This man while inebriated had cut his throat, and was lying in a pool of blood trying to sing, with a partially severed trachea.

DR. WEBB thought it would be interesting to know just how toxic DR. NORDLAND's dogs had become. He also thought that to render the condition comparable to a patient undergoing operation, the dogs should be fed Lugol's solution and brought back to normal. It would rather seem that a heart which was being whipped on by a toxic goiter was better able to take care of itself under such circumstances than a normal heart. This is especially brought to our attention when one considers the large number of goiter operations performed with an inexperienced assistant catching the bleeding vessels.

DR. KENNETH BULKLEY said he was impressed by what DR. MURPHY said in regard to looking over the literature and the more frequent occurrence of emboli in foreign countries than in this country. DR. BULKLEY said he was in France two and a half years and watched particularly Morestin, who was the best known neck

and facial man France had ever produced. Theoretically, Morestin should never have had an air embolism. He operated in a well of blood about two inches deep, and had one nonsterile nun and usually only one 12 or 14 year old boy helping him. He would do a block neck dissection in fifteen or twenty minutes. DR. BULKLEY had seen him do an excision of the tongue and neck dissection in a half hour.

As to what DR. WEBB said about cut throats and why they do not get air embolism, DR. BULKLEY stated that he had never seen a case, and yet while he was house surgeon at Presbyterian Hospital, in New York, he was called when two of their old orderlies, in a state of depression, had cut their throats, and neither had air embolism. He had seen two others but neither of them had had air embolism, although there were two immediate deaths in the group, one from immediate hemorrhage and the other later from sepsis.

DR. NORDLAND, in closing, stated he wanted to thank the gentlemen for their remarks in the discussions. He appreciated DR. ZIEROLD's suggestion that the weight of the heart ought to be considered with reference to the effect of the quantity of air that might be injected.

DR. NORDLAND believed that the reason why accidental injuries to the veins of the neck, such as cut throats, did not produce air emboli, was the fact that these veins were probably cut above the point where they passed through the fascia obliquely. It also might be explained by the facts demonstrated in this study, that it takes larger quantities of air to cause death in the nontoxic individual.

In answer to DR. JOHNSON's question with reference to the rapidity of the injection of the air, DR. NORDLAND said the air was injected at a speed of about 100 cc. within two seconds. The same speed was used for the normal and the toxic animals.

DR. MURPHY's suggestion that reports of death from air embolism were more common in Europe than in this country, might be explained by the fact that, in the past, post mortems were more frequent there than in this country.

DR. NORDLAND wished to emphasize again that the object of this experimental work was to find out whether or not the toxic goiter patient was more susceptible to air embolism than the nontoxic patient, and he felt that from the results of this work one could say that the toxic patient was more susceptible.

An Eastman moving picture film of "Simple Goiter" was shown, after which the meeting adjourned.

H. O. MCPHEETERS, M. D., Secretary.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. Maud Gerdes has joined her father in general practice of medicine at Eureka, S. D.

Dr. and Mrs. C. D'Arcy Wright, Minneapolis, will leave early in April for a two months' European trip.

Dr. and Mrs. H. B. Sweetzer, Minneapolis, are spending two months in Florida, making the trip by auto.

Dr. Leo T. Murphy, Minneapolis, was recently married to Miss Catherine Strickland, of Beacon, N. Y.

Dr. C. H. Holenstrom, Brainerd, has moved to Warren, Minn., and is now affiliated with the Warren Clinic.

Dr. R. F. Erickson, Minneapolis, is in New York, where he is taking a few months' post-graduate work.

Andover, S. D., is without the services of a practicing physician since the death of the late Dr. J. F. Miller.

Dr. Ernest Wheeler, Fargo, one of the pioneer surgeons of North Dakota, died at Tacoma, Wash., this month.

Dr. L. B. Vaughn, who has been in active practice at Huron, S. D., for many years, has moved to Los Angeles, Calif.

Dr. T. D. Jones, Bowdle, S. D., will spend the next eight months in Europe in the study of surgery in which he is specializing.

Dr. Wm. Dodge, formerly in practice at Le Sueur, Minn., died recently at Los Angeles, Calif., after a serious illness of many months.

Dr. M. Brownstone, Hopkins, Minn., has moved to Sandstone, Minn., where he has purchased the practice of the late Dr. B. S. Bohling.

Dr. Henry E. Michelson, Minneapolis, was elected president of the Chicago Dermatological Society, at the annual meeting held in that city this month.

Dr. W. C. Stillwell, Mankato, was elected president of the Blue Earth County Medical Society at the annual meeting held in that city last month.

Dr. Fannie D. Quain, Bismarck, has again been elected president of the North Dakota Tuberculosis Association of that state at the annual election held in that city this month.

Dr. R. W. Vance, has recently located at Huron, S. D., where he has opened offices for general practice. Dr. Vance is a graduate of the Northwestern Medical University, Chicago.

Dr. Clarence Larson has returned to Fargo, after an absence of a year in post-graduate work in Europe. He is affiliated with the Fargo Clinic

and will specialize in diseases of women and children.

Drs. L. A. Steffens and A. E. Johnson, Red Wing, have become associated in the general practice of medicine and surgery. Both doctors are well known in the profession in all sections of Minnesota.

Dr. J. W. Magelssen, a pioneer physician of over fifty years' practice at Rushford, Minn., died recently at the advanced age of 87 years. He graduated at the Norway University Medical School in 1863.

The Devils Lake, N. D., Medical Society held the first meeting of the new year this month with a six o'clock dinner, followed by two addresses by Dr. J. O. Anderson, Bismarck, and F. T. Cuthbert of Devils Lake.

Dr. Clay Ray Murray, associate professor of surgery at the Columbia University Medical School, delivered several lectures before the members of the Hennepin County Medical Society this month.

About fifty members of the West Central, Minn., Medical Society were guests of the Kandiyohi-Swift Co. Society. After a fine dinner was served, Dr. Markus Shellander, Minneapolis, delivered the principal address.

A woman has been awarded the first fellowship in the Macy Foundation from the list of Fellows of Mayo Foundation, Rochester, for distinguished service in medical research. She is Dr. Frances Van Zant of Houston, Texas.

Dr. Charles Miller Wilson, Duluth, died this month in that city at the advanced age of 85 years. Dr. Wilson was a graduate of the Cincinnati Medical School in 1871 and had been in active practice at Duluth for the past thirty years.

The midyear session of the North Dakota Academy of Ophthalmology, was held recently at Fargo. The meeting was one of the best as regards the number of members present, that has ever been held. Dr. H. B. Beeson, Grand Forks, is president; Dr. J. L. Millers, Grand Forks, vice president, and Dr. F. L. Wicks, Valley City, secretary.

Dr. R. G. Mayer, Aberdeen, was elected president of the Aberdeen District Medical Society at its annual meeting recently held in that city. Dr. T. W. Murphy, Pierpont, vice president, and Dr. P. V. McCarthy, Aberdeen, secretary-treasurer. Delegates selected to attend state convention were: Doctors B. C. Murdy, E. A. Pittenge and R. D. Wilson, all of Aberdeen.

Registration and payment of a license fee by all persons practicing medicine and surgery in North Dakota will be required by a bill before the State Legislature. The bill will require an initial license fee of \$5 and \$2 annually thereafter. Failure to pay the license fee would result in suspension and revocation of license by the state board of medical examiners.

Doctors from many points in northeastern South Dakota were present at the Aberdeen District Medical Society meeting held at Aberdeen last month. The following papers were presented: Dr. J. B. Carey, Minneapolis, "Classification and Management of the Anemias," while Rochester, Minn. Dr. G. I. W. Cottom of St. Paul, address was "Intestinal Obstruction."

John Hugh Lally, formerly of St. Paul, was found guilty of treating persons contrary to the provisions of the Medical Act of Manitoba, Canada. The conviction took place at Winnipeg. Lally was fined one hundred dollars and costs. Lally operated an office at the St. Paul Hotel, St. Paul, during the month of November and departed rather hastily from the State after the State Board of Medical Examiners instituted an investigation of his activities.

Dr. John B. Frisbee was elected president of the St. James' hospital staff of physicians and surgeons at Butte, Mont. The members of the staff were the guests of Sisters of Charity at a delightful banquet. Other officers named were Dr. Charles Canty, vice president, and Dr. W. A. Reichle, secretary. Dr. T. J. B. Shanley, the retiring president, made a brief address in which he gave a résumé of the last year's activities and spoke optimistically of the future.

Dr. J. C. Litzenberg, Minneapolis, professor of medicine at the University of Minnesota, has been appointed a member of a newly created board which will test physicians. He is a member of the American Board of Obstetrics and Gynecology, created this winter by the American Medical society. First examinations given by the board will be held on March 14. The tests are given to judge the proficiency of specialists practicing throughout the United States.

Dr. H. O. Grangaard, of Ryder, N. D., is the president of the Northwestern District Medical Society, which includes several counties in that section of the state. The election of Dr. Grangaard took place at a meeting held at Trinity hospital in Minot, which was declared to have been the best attended meeting held during the past year. Thirty-five doctors were present, representing 11 communities. Other new officers

chosen are Dr. P. H. Rowe, vice president, and Dr. J. R. Pence, secretary-treasurer, both of Minot.

The supreme court of North Dakota has reversed a verdict in district court, by Gilbert Ness against Dr. T. N. Yeomans of Minot, holding that a physician and surgeon is not an insurer of the results of his treatment of a patient. Ness had obtained a judgment for \$3,200 against Dr. Yeomans, following treatment for a broken arm. The supreme court declares that it is incumbent upon the plaintiff to show that the course of treatment prescribed and followed by the defendant was not the good and accepted practice of his school of medicine in his community.

Dr. Clinton Smith, Devils Lake, was elected president of the Devils Lake Medical Society for the coming year at the quarterly meeting of the organization held last month. Other officers elected were Dr. L. Laugerson, Cando, vice president; Dr. G. F. Drew, Devils Lake, secretary-treasurer, and Dr. C. J. McGurran, Devils Lake, delegate to the state medical convention. Following a fine dinner, Dr. J. O. Arneson of Bismarck, gave a talk, using illustrated slides, on Heart Conditions, and F. T. Cuthbert, local attorney, gave an address on the Relationship Between Law and Medicine.

Averlino Fernandez, formerly of Monterey, Mexico, was sentenced to one year in the Workhouse at St. Paul, following the entering of a plea of guilty by the defendant to a charge of practicing healing without a Basic Science Certificate. Defendant had been in St. Paul about sixty days at the time of his arrest. He had no medical experience, but had worked in a drug store in Monterey, Mexico. He confined his practice to the Mexican people in St. Paul. The Court informed the defendant that if a future complaint was made against him he would be placed in the workhouse and made to serve the sentence without any opportunity of having a trial.

MISCELLANY

FARGO MEETING

The North Dakota Academy of Ophthalmology and Oto-laryngology held its mid-year meeting in Fargo, January 24.

Dinner was served, after which the meeting was called to order by Dr. J. P. Miller of Grand Forks.

The Scientific program was as follows:

The Etiology and Treatment of Convergent Squint; Film Illustration—Dr. Hendrie W. Grant, St. Paul.

The Intravenous Use of Mercurochrome in Sepsis—Dr. A. D. McCannel, Minot.

Biography of Adam Politzer—Dr. J. P. Miller, Grand Forks.

Case Reports: Cavernous and Lateral Sinus Thrombosis Traumatic Ophthalmoplegia—Dr. George M. Constans, Bismarck.

Case Report: A Typical Mastoid—Dr. M. B. Ruud, Grand Forks.

A very fine discussion featured this excellent program.

Dr. Constans reported for the Legislative Committee on pending bills. Dr. Grant was elected to honorary membership in the Academy. The meeting was then adjourned to spend a social hour with Dr. Tainter as host, at his home.

F. L. Wicks, M. D., Secretary.

PROGRAM

Meeting of the American Association for the Study of Goiter, April 7, 8, 9, Kansas City, Missouri.

Tuesday Morning—April 7

Diagnostic Clinic—Dr. H. S. Plummer—Rochester, Minnesota.

Clinical Pathological Conference—Conducted by Dr. Gordon Fahrni—Winnipeg, Canada.

Opened by: Dr. Allen Graham, Cleveland, Ohio; Dr. S. D. Van Meter, Denver, Colorado; Dr. Harold Marsh, Madison, Wisconsin; Dr. Frank Dorsey, Keokuk, Iowa.

Tuesday Afternoon—April 7

Dr. H. S. Plummer, Rochester, Minnesota; Dr. J. F. McClendon, University of Minnesota; Dr. C. Toland, Los Angeles, California; Dr. Morris Ginsberg, Kansas City, Missouri; Dr. Martin Nordland, Minneapolis, Minnesota; Dr. Le Roy D. Long, Oklahoma City, Oklahoma.

Wednesday Morning—April 8

Surgical Clinics presented by staffs of Kansas City Hospitals.

Round Table Discussion of Important Problems relating to Thyroid Surgery.

Conducted by Dr. Arnold Jackson, Madison, Wisconsin.

Opened by: Dr. E. R. Arn, Dayton, Ohio; Dr. Ambrose Lockwood, Toronto, Canada; Dr. John Pemberton, Rochester, Minnesota; Dr. J. R. Yung, Terre Haute, Indiana.

Wednesday Afternoon—April 8

Address—Dr. Kerwin Kinard, Kansas City, Missouri, President of the Society.

Paper—Dr. R. D. McClure and Dr. A. B. McGraw, Detroit, Michigan; Dr. Emil Goetsch, Brooklyn, New York; Dr. Fred Coller and Dr. R. D. Arn, Ann Arbor, Michigan; Dr. William Dinsmore, Cleveland, Ohio; Dr. Harry Richter, Chicago, Illinois; Dr. K. McGregor, Hamilton, Ontario.

Thursday Morning—April 9

Symposium: The Goiter Heart, Dr. L. S. Milne, Kansas City, Missouri; Dr. Harold Marsh, Madison, Wisconsin.

Symposium: Preparation and After Care of Operative Cases, Dr. James Hayes, Minneapolis, Minnesota; Dr. A. E. Hertzler and Dr. V. E. Chesky, Halstead, Kansas; Dr. E. P. Sloan, Bloomington, Illinois.

Thursday Afternoon—April 9

Address—Dr. Charles Frazier, Philadelphia, Pennsylvania.

Paper—Dr. Andre Crotti, Columbus, Ohio; Dr. Allen Graham, Cleveland, Ohio; Dr. Howard Clute, Boston, Massachusetts; Dr. Fred Wetherell, Syracuse, New York; Dr. Walter Sistrunk, Dallas, Texas; Dr. Brien T. King, Seattle, Washington.

THE JOURNAL-~~L~~ANCET

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SYPHILIS*

BY DAVID M. BLUM, M.D.
DES MOINES, IOWA

The slides I have with me today demonstrate syphilis. I originally collected them for a course of lectures before the nurses of two of the hospitals in Des Moines, because we know that the greatest percentage of innocent syphilis occurs in nurses, doctors and dentists. I have added to the slides, and I hope there are a few things I may recall to your minds.

I will not attempt to go into an extensive differential diagnosis on many of these things, just a few things about the historical introduction and one or two practical points which have come to my mind in the last three or four years. Then I will show you the slides.

Syphilis is a disease which is thought to have been traced back to China and occurred about the twelfth century, but the greatest scourge appeared in Europe about the time Columbus' sailors came back from America. Columbus had appealed to the throne of France and also to the throne of Spain, where he finally received financial backing. Later he came back and reported fabulous wealth. Of course there was a tremendous amount of jealousy in Europe. Immediately this disease was connected with venereal contact. The French attached a Spanish name

to it and the Spanish attached a French name to it. Louis was on the throne, and that is where the name "lues" came from.

The name itself was first mentioned by Homer in the Iliad. I wish to state one or two practical points as far as the diagnosis of the initial lesion is concerned. I have had opportunity to examine quite a few initial lesions on various places of the body, pictures of which I will show you today.

One of the most difficult tasks is to attempt to find, under the dark field, the organism causing syphilis, when the patient has gone to some corner drug store and has put on everything from mercurochrome and tincture of iodine to anything the druggist has in mind.

As far as the Wassermann test is concerned, one interesting fact occurred to me about six years ago. I examined a man for insurance, a prominent man in Des Moines. Within the course of a few weeks I was asked to re-examine him on account of a suspicious history of venereal disease, syphilis, which he denied. In order to clear up the diagnosis I took a blood test which I sent to Iowa City, and it came back 4 plus positive. Of course he denied it. Hoping there might be some mistake I repeated it and again it came back 4 plus positive. So he consulted another

*Address delivered at a meeting of the South Dakota State Medical Association, at Sioux Falls, South Dakota, May 21-22, 1930.

physician in Des Moines. All of this was in the course of about a week. The physician took a blood test and it came back negative. He told the story that I had two that were positive. The physician took blood again and had it examined, and it came back suspicious positive or negative.

Then the gentleman came back to me and was very indignant. In looking up this matter I found in Craig's book, a series of cases which during the war were followed at Fort Leavenworth where he had the men under definite control of food, environment and other factors, which have been known to change Wassermann reactions. He definitely found that a Wassermann reaction can change from positive to negative and back to positive within forty-eight hours. That is interesting.

If you were examining a patient for tuberculosis and you were interested in his temperature, you would not take one temperature reading in the morning, have it normal and say he had no afternoon temperature. You would make repeated observations. There may be negative waves in serology the same as there may be positive waves depending on the antibodies thrown out.

Of course the organism in syphilis, as you well know is a spirochete.

In this first slide I hope to show you that there may be other spirochetes, particularly in the mouth. This must be kept in mind. In this slide you see under the dark field a typical curly organism which contains from five to twenty curls, and when seen revolves rapidly and sometimes slowly in a circular manner and at times moves longitudinally. When you put on any type of a local antiseptic on these organisms you destroy them and thereby lessen any chance the patient might have for an early diagnosis. Of course where these cannot be found in the original lesion, they can sometimes be recovered from a gland, merely by a few drops of normal saline in a syringe, the needle introduced into the gland and gently worked back and forth, a drop or two aspirated, and then put under the dark field.

The primary lesion of syphilis is known as a chancre. Chancre was originally described as being hard and cartilaginous, said to feel like the end of your nose. But we know now that the hard induration is not specific. It may vary all the way from an innocent looking scratch to a definite, hard, ulcerated, crater like sore. One of the most typical places in women is on the

cervix. Any ulcer found on the genitals of women should be suspected of syphilis until it is absolutely ruled out by a dark field.

Typical on the male, it is found of course, on the head of the penis, particularly under the foreskin where it may be unsuspected. A colleague of mine in Des Moines only last week was telling me of a gentleman who was sent to the hospital with a diagnosis of recurrent femoral hernia. When the interne examined him, and slipped the foreskin back, he found a chancre, and a diagnosis of a syphilitic gland was made.

This initial lesion may vary in the acute condition from a small ulceration until, after a few weeks untreated, it has a healing, curling sclerotic edge. One place where chancres are quite often overlooked is on the cervix of women. I am quite sure if many of the endocervicitis cases had dark field examinations spirochetes would be found much more often than they are now.

We had an idea that chancre would have to be single. I believe that has changed. This gentleman had a chancre and at the same time had scabies. In scratching, he inoculated himself five times.

This is one of the unfortunate things that happened to a professional man, a dentist in Des Moines, who was in the habit of sticking his fingers in a patient's mouth without washing his hands afterwards. He developed a runround, which he thought was a whitlow. This did not respond to ordinary treatment until I recovered spirochetes from about the nail. You men who are doing vaginal examinations without gloves or without washing your hands afterwards, are always open to such a thing, so are the dentists and so are the nurses.

Here is a chancre on the face. Goodman, in a recent article, says that most of the cases of chancres of the face that have been investigated, come from the barber shops in which the barber first shaves with soap, which is a good antiseptic and secondly only puts on water without soap. He has been attempting for some time to get the State Board of New York to have barbers shave the second time with soap as well as the first time. It is pretty hard to get them to change.

Incidentally, I might say I think one of the most curious chancres I had an opportunity of making a diagnosis of was a man who had a fight with a woman in Des Moines and she bit him. He came in with the tooth marks. You could see the upper and lower imprints of the teeth

from which I recovered spirochetes in large numbers.

Here is a chancre on the tongue. Such a thing may come from using somebody else's tooth brush, drinking utensils or kissing. Here is one on the breast; a syphilitic baby having been nursed by a wet-nurse. There may be cracks at the nipple through which spirochetes may enter. This one is on the lip. I saw one girl who went to a party and played "postoffice." Somebody in the party had an initial lesion which she contracted. I have one under my care, a very unfortunate young lad who is a student in one of the schools, working his way through. He worked at one of the hotels. The cook had a chancre of the lip. This boy developed a chancre of the lip and four of the waitresses developed chancre of the lip.

Chancres have been known to occur on the eye. About two years ago I saw an old lady who had one on the eye, a woman sixty-five years old, who evidently had used a public towel in a wash room in one of the department stores, so far as I can figure. These cases must all be suspected, particularly if accompanied by a painless swelling of the sentinel gland. Here you see you may have a double lesion on the lip. With this patient you also see suspicious mucous patches in the mouth.

A chancre may occur on the tonsils and represent an ordinary sore throat from external appearances, but it does not get well with ordinary gargles. I saw such a case sometime ago which was not diagnosed until some other members of the family had been innocently exposed and developed extragenital chancres.

Again, chancre may resemble diphtheria with a crawling membrane. Such patients are not sick as you see them in diphtheria. They do not have the pain that you observe with trench mouth. They don't have the temperature you observe with acute sore throat, but they do have a crawling destructive membrane which should make you suspicious especially with the painless sentinel gland. Most of these slides show you the locations where you should search for the initial lesion. They can occur in any place on the body, hands, fingers, eyes, tongue, besides on the genitals.

The secondary stage of syphilis is ushered in usually by a skin rash, and sometimes by constitutional symptoms of which 53 per cent usually show sore throat, 42 per cent show some type of malaise, often mistaken for rheumatism if they

have joint pains, 24 per cent headaches, 18 per cent loss of weight, 14 per cent fever, 8 per cent some type of meningitis, 7 per cent gastro-intestinal symptoms, 7 per cent "rheumatism," 5 per cent pseudotuberculosis symptoms and 4 per cent nervousness. The rest are distributed among iritis, vaginal discharge, anemia, deafness, hoarseness, osteitis, myalgia, nocturnal ostealgia, periostitis, arthritis, seventh nerve palsy, and insomnia.

The main things I want to show you are some of the external appearances on the skin. Characteristic is a discharge in a moist place as on the vulva or under the head of the foreskin producing condylomas. When you look into the throat in secondary syphilis there is a dull red, infected sore throat which does not correspond with ordinary streptococcus sore throats with temperature and pain.

This slide is not so plain, but if you could see it a little more distinctly, you would see a salmon colored rash. It must be differentiated from German measles and a number of acute contagious diseases. It differs from most of them by not having the acute onset, fever, temperature, and is not associated with a history of exposure.

Characteristic of the second stage is also alopecia, which varies from the alopecia areata because it appears to be moth eaten. It may occur on any place on the head, with loss of eyebrows and patchy destruction of the mustache. One characteristic lesion particularly on the neck is called the Collar of Venus and is associated with the loss of pigment with the occurrence of vitiliginous patches likened to a lace curtain effect. This is quite characteristic, particularly in women, more so in women than in men. A papular rash may also occur on the neck, and must be differentiated from dermatitis capillitii.

I saw a patient a few years ago who came in with rather a peculiar history. He had been to a number of physicians with a peculiar eruption on his tongue. It came after smoking "Camels" but not after "Lucky Strikes," and had passed through several hands without any suspicion of being mucous patches. I went into his history more thoroughly and found he had been insufficiently treated some years ago for a primary lesion and had a 4 plus Wassermann. Any slight irritation of the throat would bring forth mucous patches.

You may also observe a vesicular eruption on the face as well as on the body and often mistake it for smallpox or chickenpox. It may be mistaken especially if patients are receiving large doses of iodids and bromides for other reasons.

The vesicular eruption may also occur on the hands and feet. It is not so prone to develop there as in some acute contagious disease such as smallpox. It is not seen as frequently in colored people as in white people. Again there may be the squamous type on the leg.

The nodular form of eruption may also resemble lupus vulgaris, but does not have the apple jelly like nodules even under the dioscope. The squamous form may also resemble dermatitis seborrheica, both on the body and on the face.

One of the characteristic things is inflammation of the tongue, glossitis. In most of the cases of glossitis you must consider, in a differential diagnosis, syphilis, pernicious anemia, carcinoma and diabetes.

Going from the secondary stage to the tertiary stage, one of the most characteristic things is the gumma. One of the most frequent sites is a perforation through the hard palate or through the septum of the nose. Gunmas are quite destructive to the nose. They may also resemble a carcinoma. The gumma may advance with a slowly crawling margin and heal in the center, leaving a tissue paper like scar. Gunmas may be seen on the nails of the hands and feet. They must be distinguished from ringworm, psoriasis and various other infections of the nail. Of course in ringworm of the nails you are quite often able to find a *Trichophyton* under a microscopic slide on examination.

There is one thing peculiar about the spirochete. From the early stage, chancre, to the tertiary stage, gumma, it has a predilection to cause an endarteritis. Even in the chancre you find plasma cells and lymphocytes occluding the lumen of the veins and arteries. Syphilis is transmitted solely through lymph channels. I think probably one of the best examples I know of occurred when I was an intern in Chicago. One of the boys accidentally developed a sore throat which proved to be syphilitic. He happened to be a universal donor. One night one of the physicians brought in a case of ruptured ulcer. This young lad was asked to give blood for a transfusion. The patient was transfused with 500 c.c. of blood and did not develop syphilis. Surely if syphilis is a blood borne infection, something should have developed.

In this slide the characteristic thing I want to call your attention to is the destructive gummatous infiltration of the toe, which must be differentiated from Raynaud's disease, arterio-sclerotic gangrene, Buerger's disease and diabetic gangrene. These should all be kept in mind. Gunmas are quite prone to affect the bone. You

see them in the skull, the clavicle, and the mastoid. On the leg it may appear as a punched-out ulcer which is much more prone to occur toward the knee than toward the ankle where you find the varicose ulcers and in healing leaves a tissue paper scar. It may also attack the tongue or the lip, almost resembling carcinoma. Another characteristic, as far as the vascular system is concerned, is the destructive defect in the aorta with aneurysm.

Charcot's disease may be mistaken for rheumatism, osteomyelitis, or arthritis such as Dr. Irons spoke about this morning in its early stage. He showed a case of Charcot's disease of the spine.

As far as interesting complications and treatment are concerned we must distinguish in the mouth mercurial stomatitis, bismuth stomatitis, and buccal secondary lues. Mercurial stomatitis can be differentiated from secondary lues; in mercurial stomatitis there may be edema of the tongue with imprints of the dental incisures on the margin, erosion and ulceration, especially of apposed surfaces and crypts, yellowish gray exudate, livid color, necrosis, marked fetor, and edema and bleeding of gums, no papular lesions, soreness on clenching teeth and marked local adenopathy. In buccal lues there is little local edema, a pearly exudate, scant red pallor, little necrosis or detritus, slight fetor, mucous patches may be seen on the gum. Gum tissue is usually firm and pale, not hemorrhagic or separated from the teeth. Papular lesions are often found. There is no soreness in connection with the teeth, and there may be generalized adenopathy. In bismuth stomatitis the same thing may happen accompanied with the characteristic black line, with marked fetor and pigment patches on the mucosa. One of the characteristic things in mercurial stomatitis from over treatment with mercury is the gingivitis that develops. The arsenicals may produce a stomatitis in association with an aplastic anemia, purpura or generalized exfoliative dermatitis.

As far as hereditary syphilis is concerned, there are several things I want to call to your attention. Eruption is rare before the third week, distribution is distinctly to the face and mouth region, genital region, palms and soles; and may be eczematous. You may have condylomas and mucous lesions. Ten per cent may have pemphigoid bullae. The child usually has snuffles. There may be fissures of the lip, large spleen, cracked cry, pseudoparalysis, osteochondritis, large joints in the hands and ankles, epitrochlear adenopathy, and later on, saddle deformity of the nose. Later on there may be pul-

monary, hepatic, or marasmic symptoms. The chief landmarks of retarded hereditosyphilis occur after about fourteen years. There may be a positive Wassermann, interstitial keratitis, Hutchinsonian incisors mulberry molars, eighth nerve deafness, saber shaped tibia, osteitis of the nasal septum, snuffles, spleno-megalia before the fourth month, dactylitis, and a typical facies. In the secondary form there may be aplasia of the incisor teeth, scaphoid scapula, disturbance of age development, high nervous irritability, early epitrochlear adenopathy and high, narrow palatine arch and frontal bosses.

Minor things are venous ectasia, hypertrichosis, ulnar deviation of the middle finger, constitutional subnormality, backwardness, hypertrophic frontal sutures, craniotabes, and bilateral dacryocystitis in childhood.

The debatable things concerning diagnosis are: retromastoid adenitis, persistent infantile hydrocele, hypertrophic thymus, alopecia areata in children, knockknee elbow, urticaria, and asthma in some children.

Here are shown some of the typical fissures about the lips, together with the eczematous exudate over the face. The child was having snuffles. Also characteristic are vesicular eruptions, particularly on the soles and the hands. This may vary from vesicles to an eczematoid state. Once the skin is dry it may crack. Characteristic of the adolescent stage are interstitial keratitis, saddle nose and the spiked teeth.

This slide is interesting. Not in the first set of teeth, but long before the second erupt, X-rays may show Hutchinson teeth. This shows the typical mulberry molar and this one Hutchinson peg-shaped teeth with extensive destruction of the upper teeth.

There are one or two things I want to say about treatment. In the chancre, if treated after an early diagnosis is made, we should expect ultimate therapeutic results in almost 100 per cent. Macular, papular and pustular lesions should also respond.

When we get down to the tertiary stage, our ultimate therapeutic results may vary from 70 per cent to 80 per cent, and where we get to the early paresis and the severe nerve involvement, from 10 to 24 per cent, to where we can hardly help them at all.

As to the type of treatment, there are three or four standbys: bismuth, mercury, arsenicals and iodides.

As to the use of the arsphenamins and mercurials, they should not be used on everybody indiscriminately. There are seven reasons in

which we may expect unfavorable consequences from large doses of arsphenamins: (1) Acute meningeal and diffuse encephalitic conditions; (2) early diffuse hepatitis and cirrhosis, spleno-megalias; (3) myocarditis, coronary lesions, conduction lesions and aneurysms; (4) advanced tuberculosis and septic processes, particularly if they are febrile; (5) acute nephrosis, late interstitial nephritis; (6) various skin diseases such as eczema, seborrhea, and (7) particularly cutaneous hypersensitiveness to the arsenicals. It may be well to inject only a small amount to see if the patient has any reaction before injecting the complete dose.

As to the differences in the therapeutic activity between mercury, bismuth, arsenicals and iodides: As far as mercury is concerned, it has very slight direct spirillicidal effect, almost nil, although its antibody building is great.

Bismuth has more spirochetocidal effect than mercury, the arsenicals the highest, and the iodides practically none. As far as antibody building formation, mercury has the most, bismuth is intermediate and arsenicals are practically void of any. We know practically nothing about iodides along this line.

As far as the specific effects, mercury shows marked stimulation of the cellular resistance to *Spirocheta Pallida* and slight direct destructive effect. It causes formation of agglutinins and lysins.

The nonspecific effects of bismuth are little known at the present time, though its specific effects are more direct than mercury.

The arsenicals have a marked direct destructive effect on *Spirocheta Pallida* and cause the formation of agglutinins and lysins and have an action upon other infectious processes, including tuberculosis lymphomas, uveitis, and mycoses. All these effects are more marked than with mercury or bismuth. It may also have an effect on the destruction of intestinal parasites and tonic effects such as arsenicals have when given otherwise. The iodides have no specific effects though resolve granulomatous tissue.

As to the form of arsenical used. Arsphenamin was the first brought out. At present it is not used as much on account of the technical difficulty in administration. It must be neutralized when given and must be given slowly. Neo-arsphenamin may be given immediately, without neutralizing and is proving to be the most popular.

This much between the two must never be forgotten. Arsphenamin has an acid reaction.

SOME AIMS AND PURPOSES OF MODERN CLINICAL NEUROLOGY

BY TOM A. WILLIAMS, M.D. C. in (Educ.)

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The name of "neurologist" was formerly assumed by the untrained, who deceived their colleagues by their unintelligibility, covering their ignorance with terms lacking precision or correspondence with clinical observation. Neurological science was then in its cradle, and there was no critical medical public to expose the pretender. The limits of the old neurology were the diagnoses of organic nervous diseases, which were divided into rigid clinical categories, few of which were based on pathogenesis. To this some neurologists added the treatment of functional nervous conditions. This consisted of an empirical imposition of a therapeutic blunderbuss, comprising isolation in bed, massage, electricity and overfeeding. A few gifted men added to this a shrewd knowledge of neurotic human nature, by virtue of which they converted patients without physical disease into the belief that they were well, and through this crude method achieved a certain proportion of cures.

The "rest-cure" blunderbuss also cured many persons who needed this energy sparing and up-building method, more especially patients with incipient tuberculosis and those with assimilative powers unequal to the strain of an overburdened life. Cases of simple asthenia and also persons whose social adaptations had failed were naturally benefited for a time. But the method was very expensive, many of the procedures in any single case were superfluous, and the process frequently failed because it was not properly applicable to the case in question.

CLASSIFICATION OF NERVOUS DISEASES

The material consists of nervous disorders classifiable into three groups, each possessing a fundamentally different character. These are:

I. Anatomical changes in the nervous system itself, or in its supportive connective tissue. These are known as organic nervous diseases. The method of differentiating these disorders is generally contingent upon the topography of the ner-

vous system. Localization and focal diagnosis are the chief diagnostic assets in such cases. The means utilized are the exploration of the reflectivity; the motility, including the cerebellar functions; the sensibility, including the special senses, and, to some degree, the autonomic and psychic functions, more especially when the disorders of these are partial and conform to some neurological region.

Laboratory investigation becomes of help in proportion as neurological knowledge is inadequate; but in some cases the neurological signs may be lacking and the general biological reaction may settle the etiological diagnosis, which is often of greater importance than the topographical diagnosis. Examples of these principles abound, not only in neurological literature, but in general medicine. Regarding diagnosis, we should add that, unless the reports are made by properly trained neurologists, the statements should be received with reserve, even when in the best medical publications. One of the most widely read textbooks of general medicine is a flagrant example.

Of the treatment of organic diseases of the nervous system, the former pessimism is no longer justifiable. The deep penetrating Roentgen ray, better surgical technique, combined with great precision of focal diagnosis, has made tumors of the spinal cord quite remediable.* Even in tumors of the brain, a much more favorable outlook is now permissible. A striking illustration is the more widespread realization of the need for intensive treatment of cerebrospinal lues, and the inclusion of tabes dorsalis in this rubric.

THE CHEMICAL PERVERSIONS

II. Functional nervous disturbances of the nervous system may be caused by physical disorders elsewhere. One of these is caused by alterations of the medium in which the neurones have to perform their work. This is influenced by chemical substances, whether infectious, intoxications or perverted secretions. The results may be either psychotic or neurotic. Typhoid and other fevers are the clearest examples, as are metabolic and endocrine disorders. See Management of Confusional States, *Int. Clin.*, 1916.

*It is of supreme importance in cases of cerebral tumor that this examination should be made before the tension has so increased as to prevent coöperation by the patient, and before the focalizing signs have become masked by remote signs which will dominate and obscure the true picture.

PSYCHOGENETIC DISEASES

III. A second class of the functional diseases is purely psychogenetic, i. e., they are generated (from within or without) by impressions upon the sensory apparatus. These arouse and associate themselves with the stored up impressions of other stimuli to form a psychological unit known as "idea," whether accompanied by emotion or not.

AN ILLUSTRATION

An example of abdominal tic with respiratory grunt, cured by psychomotor discipline was that of a man referred by an enterologist because of a grunting noise which he made with respiration, while at the same time he bent his body in a bowing tic. Physicians had recognized its functional character and had used methods of suggestion without success. I observed that sudden contractions of the recti muscles and diaphragm occurred and inferred that if the patient could be taught control of these muscles the movements would necessarily cease.

He was shown how to perform contraction of the recti and diaphragm, and that when he was voluntarily moving his abdominal muscles he could not perform the tic; and that when he voluntarily contracted the diaphragm he could not make the grunting noise. He was cured in two sittings.

A very similar case was referred by Dr. E. E. Mayer, of Pittsburgh. The same procedure cured her in one interview without reference to the etiological factor, which consisted of a domestic quarrel, the elements of which were adjusted with her afterwards.

Another patient, seen with Dr. I. S. Stone, had persistent pain after appendectomy because of a constant reference by the patient to the region formerly painful, which produced a spasm of the iliopsoas and oblique abdominal muscles. Reëducation in relaxation of muscles in general, then of those affected, was the treatment. (*Surg. Gyn. and Obst.* Jan., 1912.)

TO ILLUSTRATE THE METHOD OF
REMOVING PHOBIA

A woman of thirty-three, sent by Colonel Reichelderfer,* had, for eight years, been unable to cross a wide street or to remain in a church or theatre without intense emotional disturbance, manifesting itself as palpitation, polypnea, pallor, chilliness, moisture and cyanosis of the extremities, rigidity and pain in the neck and back, nausea, and sensations of weakness and dizziness. Examination showed no physical disease, the only signs present being those of hyperthyroidism.

*He is now one of the three commissioners of the District of Columbia, the first time a medical man has served thus.

The first occasion upon which she had experienced similar sensations had been on a hot summer day, in a poorly ventilated church, when she had felt an overwhelming sense of illness. The compulsion to leave the church had been intense, but because she was seated far front and did not wish to create a disturbance she had forced herself to remain. Some weeks later another attack occurred. They gradually occurred oftener, though at first avoidable by sitting near the door. Four years later because of the sensation of oppressive heaviness which she feared might lead to unconsciousness, she became afraid to cross a wide space. She had been an exceptionally strong girl, without worries, except anxiety over the health of an invalid mother. She had always feared high places, but thought nothing of it as the other members of her family all felt the same. There was no fear of the dark, no social timidities, other than dislike of being conspicuous as in class recitations.

The diagnosis was that the agoraphobia and claustrophobia were hysterical in origin, arising from the powerful suggestion of the recollection of a particular experience, made efficacious now only by the timorous imagination of the patient. The hyperemotivity of hyperthyroidism being occasioned by numerous circumstances, whereas in her case emotion was only contingent upon very definite circumstances, the hyperthyroidism was considered as secondary. Relief of the chronic emotional strain was believed sufficient to cure this. Reëducation was forthwith begun. The patient was unwilling to introspect at first, but yielded when it was explained that to know one's self was as important a part of living as the understanding of technique is necessary to piano playing. It was explained that her dread of a close or open place was due to her ignorance of the mechanism of the consequences of a wrong way of looking at things, and the consequent emotions, and that without a true insight into her own psychological machinery she would be unable to control it. The power of induced ideas was illustrated by the story of the lawyer made sick by a few skillfully implanted ideas, as given in the play, the "Harvest Moon." After a while she accepted this explanation, adding "it must have been fear, for on the first occasion, when leaving the church, one of the maids said, 'What frightened you?'" In the course of a few days she wrote an account of her view of her own psychology, in which she shows a clear grasp of the power of conceived ideas, and concluded by saying: "It is difficult for me to understand that these signs of illness are not illness at all but are

caused by an induced impression. But now with the assurance that there is absolutely nothing wrong with my physical makeup, my problem seems to be to rid my mind of the fear which has unconsciously but completely controlled my thought."

The next step in the treatment was to demonstrate the truth of this. I accompanied her to a large square and made her cross it alone. Though evidently accomplished under great strain, she declared that she had performed the feat better than at any time since the start of the trouble. Later she attended church with only momentary discomfort. I concluded with the final adjuration, that now since she realized she was well all depended upon herself.

Thus violent and persistent long continued agoraphobia and claustrophobia were traced to a single incident upon which they were dependent. They were removed in less than a week by efforts directed towards giving the patient an understanding of their mechanism, indeed, compelling her to grasp it and then compelling her to take an exercise which afforded a practical demonstration.

DIAGNOSE NOT BY EXCLUSION

It cannot be too often repeated that the diagnosis of hysteria should never be made by exclusion, but always, if possible, by its genesis, and if that is not possible, by the form of the syndrome exhibited, by which is meant the inconsistency of the symptoms shown with those of the topographic arrangement or physiological groupings characteristic of organic or functional disease arising in the body, as against their consistency with functional groupings comprised under the psychological rubric "association of ideas."

The reverse error of diagnosing something else when the symptoms are exclusively hysterical is also quite frequent. The error is very common in regard to paralysis.

Knowledge of psychopathology is, of course, the remedy. This knowledge becomes dangerous when it leads to ignoring physical conditions in a case which is also hysterical. It must be remembered that the most frequent of all the suggestions of bodily disease is bodily disease itself. The removal of a hysterical fixed idea concerning the health is not enough in a patient when some physical disturbance also exists.

The principle the patient is made to grasp is that fear and shame of those fears prevented him or her from facing and examining them, which is the essential preliminary to the understanding which would make them disappear. This is fully illustrated in the book, *Freaks and Besetting*

Fears, Little Brown & Co., 1923. See also *Juvenile Psychosthenia* A. J. M. Sc., 1912; *Neglected Psychopathic Factors*, J. A. N. A., 1922.

SUGGESTION UNDESIRABLE

Methods of Treatment—Erroneous and Correct

Suggestive therapeutics, so much vaunted by some, I consider grave neurological error. Psychotherapy should be a constructive growth, built on analysis, and not a mere imposing of behavior on the patient through sidetracking his attention by electricity, hypnosis, joint manipulation, or religion.

Electricity is frequently applied to patients with what is loosely called functional nervous disease. The procedure of the physician who does this has no better standing than that of the unqualified practitioner whose existence we deplore. He forgets, if he ever knew, that the inadequacy of a patient's response to environment by means of his nervous system may originate from a bodily disorder the treatment of which has nothing at all to do with the nervous system. The apparent relief may even be due to suggestion.

Other typical examples of erroneous belief in empirical remedies and desire to neutralize symptoms are afforded by the notion that an excitable person should have bromides, to meet the symptoms of excitability by a depressant; or that one feeling below par should be given stimulants, usually strychnine, although a moment's reflection should show the absurdity of treatment by a purely spinal excitant an inadequacy of the higher neurones in a patient with lower neurone reflexes already exaggerated.

Finally, a serious neurological error is in sending a patient to a sanatorium for nervous diseases without knowing the class of treatment to be given. A proper diagnosis should first be made. This will often obviate the procedure of sending the patient to an institution, and the stigma which may accrue.

EMPYHYSEMA OF HEAD AND NECK COMPLICATING TONSILLECTOMY

Three cases of emphysema complicating tonsillectomy are reported by FREDERICK H. VON HÖFE, East Orange, N. J. (*Journal A. M. A.*, Sept. 27, 1930). It seems possible that this condition may be brought about as follows: 1. The air may enter the tissue following perforation of the tonsillar fossa bed. 2. the air may enter the tissues following perforation of lung vesicles. 3. It is possible that air may enter the tissues after being forced into Wharton's duct and thence diffused.

ADDRESS OF THE PRESIDENT-ELECT*

By P. D. PEABODY, M.D.

WEBSTER, SOUTH DAKOTA

To be chosen president of one's State Medical Association is a signal honor, and I am deeply grateful to you for having conferred that honor upon me.

I am distinctly mindful of the responsibility one must assume in accepting the high position of president of this society. One must ever have in mind the interests of its individual members and of the organization as a whole. To work constructively for the betterment of those interests, to gain a little towards the goal that has been set before us is the desire of all your officers, and with your coöperation may it become a fact. The high standard of service set by our past presidents makes me ever mindful of my own shortcomings, yet I trust they may spur me on to serve you as best I can.

You are probably aware that an address by the president-elect is a new innovation. I am informed by our secretary, Dr. Cook, it is in keeping with our new rules and regulations recently adopted, the idea being, I have decided, that as president-elect he shall state what it is desired to accomplish during the ensuing year. Then at the end of the year as president to tell why he did not do it.

We are all aware of the many perplexing problems confronting the medical profession today. A glance at the proceedings of medical societies throughout the United States today, local, state, and national, will disclose that much time and thought are being given to these problems. In one locality it is the Workmen's Compensation Act, in another Contract Practice, in another Free Clinics, Pay Clinics, Health Foundations, and towering above all and confronting us all that oft hinted at possibility, State Medicine.

I heard a prominent financier remark recently, that a large percentage of the people are not aware that a rapid change is taking place in the world of business, banking, industrial, and commercial, and we have every evidence that this is true.

What concerns us as medical men is the comparatively rapid changes that have taken place in

the practice of medicine. I do not refer to the great strides that have been made in newer diagnosis and treatment, these you are familiar with. But I refer to the changed conditions which affect our economic status and the attitude of the laity towards the profession.

When we look through the years and consider how unselfishly men in our profession have labored, and have given to the world their wonderful discoveries for the cure and prevention of disease, one would think that the public would have had enough evidence of the sincerity of our endeavors in their behalf, that they would welcome our efforts to put through legislation directed towards their benefit and our own. However, Utopia is more than just around the corner. It therefore behooves us to consider our problems seriously, and to realize the fact that our salvation will depend on ourselves and not on the public.

If we are to secure protective legislation it is essential that the medical profession present a united front. Those of you who have been down to our State Capitol during a legislative session, and have labored to have enacted medical or health laws, have often been told by the powers that be that the State Medical Association does not represent a sufficient majority of the medical men of the State.

I have always felt that the doctor needs the medical society more than the society needs the individual physician. Isolated as many of us are from medical centers and the opportunity of contact with fellow practitioners, the medical meeting serves to stimulate some new thought, and at least gives a pleasant respite from the daily grind of work. Like many other things in this world one gets back proportionate to what he gives.

Officers of our district societies have all worked to bring up their membership, yet there are many good men that are still outside of our ranks. May we not try to devise some method of appeal to convince them of the advantages to be derived in joining with their state organization.

It is my opinion we should have a committee whose duty it would be to devise and carry out some plan of medical publicity and education.

*Read before the South Dakota State Medical Association, Sioux Falls, South Dakota, May 20 to 22, 1930.

Many state organizations are doing this and it is being well received.

I understand that the American Medical Association has material on hand to furnish to state medical societies or to district medical societies, in line with what should be carried on as medical education for the public. I sincerely hope that either through our districts or through the state society we shall get some concentrated effort for medical publicity. I am rather inclined to think we can go ahead and appoint a committee whose duty it will be to investigate this matter and try to place material in front of the district societies and local societies, so it will all be uniform in the matter and manner of its carrying out. I think that most of you will approve of that plan.

I should like to have some of you either write me or the Secretary and give your opinion as to the advisability or bring it up at your district society's next meeting, and let us know what you think would be advisable to do in this line.

The periodic health examination is with us and has come to stay. This movement should have been pioneered by the medical societies instead of by the insurance companies. Physicians should acquaint themselves with the routine of these examinations. Proper publicity as to the importance of these examinations will contribute to the public health, and redound to the credit of the medical profession and add to their income.

I have felt for a long time the necessity for closer coöperation of the physician and the agencies concerned in public health work. In every community there springs up from time to time some movement concerning itself with the public health, fostered by some club or organization independent of public health authorities or of the physicians in the community.

I judge that all of you have been called upon many times to give your services for examinations, serum tests or vaccinations. Not one of us but would gladly donate our services in cases where the financial condition of the patient warrants it. But I feel that it is an imposition on the physician to expect him to donate his services in cases that are well able to pay. If the services are going to prevent disease, cure disease or add to the patient's general health, then those services should be paid for either by those who are benefited or the burden should fall on the county purse. My opinion is if we do not value our own services the public will not.

District societies should discuss this subject and set a fair remuneration for the work performed.

If the State Medical Association could be more

closely associated with the work of the State Board of Health, there would be better opportunity for each to familiarize itself with the future programs of the other; the work of one so closely parallels the work of the other that coöperation I am sure would be of mutual advantage.

In a recent conversation with Dr. Jenkins, head of our State Health Board, he stated the following views:

1. That the State Medical Association should directly foster and guide public health activities.
2. That the progressive practice of medicine is the foundation of some health work.
3. That to secure maximum results physicians, nurses, teachers, and the official health personnel must join forces.
4. That an advising committee should be appointed by the State Medical Association to work in conjunction with the Board of Health.

These suggestions should have our serious consideration, and I trust some action may be taken by our Association looking towards that end.

The subject of the advisability of presenting a Basic Science Law to our legislature this year has been very thoroughly discussed in the House of Delegates and Councilors, and it seems the consensus of opinion that it would be unwise to urge enactment of a law at this time. It would seem best that members of the medical profession should familiarize themselves with every detail of the proposed law, and then either collectively or individually to acquaint those members in our respective districts who will represent us at Pierre two years hence of our desires. There is a possibility that the cults will present a bill at the next session of the Legislature asking for hospital privileges and the privilege of doing surgery. If this proposed law comes up each one of us must take it upon himself to do all possible with our representatives to combat it.

In closing, I want to add to what Dr. Cook has said in regard to the proposed fiftieth anniversary celebration that is going to take place. If we do hold that meeting jointly with North Dakota it should be a very high grade program. North Dakota always has fostered an A-1 program, and between the two of us we ought to have something that will be worth the while of every man to attend.

However, I want to urge that so far as our society is concerned, each district will take it upon itself to look after its own affairs so that we shall be able to turn in a good report of work done, of membership, and shall not have to feel belittled in reporting at a joint meeting of the two societies.

EUROPEAN CLINICS*

By H. W. FROEHLICH, M.D.
THIEF RIVER FALLS, MINNESOTA

There was a time when the American physician wishing to get the latest in medicine and its allied branches made a pilgrimage to the clinics of Europe. That time has passed, and we find the work in America equal to any that I saw over there. But the opportunities for observing the work in our country are lacking, while many of the clinics of Europe make special efforts to attract the foreign physician. Therefore, every year we see a large number of American physicians, as well as physicians from every country of the globe, attending the clinics of Europe.

Owing to the different customs and languages it is sometimes difficult to get all there is to learn. It would be very helpful before going to Europe if one would learn either German or French, so as to understand in the main what is being said. Most of the doctors of Europe, especially the physicians of the large clinics, speak the three languages, French, German, and English. French or German is mostly spoken in the operating room clinics. Notices and directions are almost always either in the French or in the German language; while most of the private courses are given by men who speak English, there are some men who give excellent courses but only in the French or German language.

There are several ways of visiting foreign clinics depending on the time, the money he wishes to spend, and the inclination of the individual doctor. First, in large conducted tours where all arrangements are made for you and you travel in a body and see spectacular operations performed by famous men; you are entertained by the faculties of famous universities; you are rushed through the wards of large hospitals to see some out of the ordinary case; everything is done at high pressure and you are back home in six to eight weeks.

Another way to see the clinics is to take from three to six months alone or with your family, and combine pleasure with work by visiting some of the famous cities of Europe and their clinics. In no way can a doctor better broaden

his views than by combining with his medical work visits to those places which are famous in art, science, and the literature of the world.

By applying to the heads of the clinics you wish to visit you are welcome to stay as long as you wish, and are shown many courtesies and all that they have of interest, either by the chief himself or one of his assistants. You may not see a great number of spectacular operations, but you will see a great many of the ordinary run of cases and their special lines of treatment as developed in that particular clinic. As an example, in the clinic of Professor Clairmont, at Zurich, all their burn cases are put to sleep and with a brush all blisters are brushed off the burn area, the surface is then dressed with sterile gauze, which is left on for eight or ten days. Professor Clairmont believes that by this method he eliminates the absorption of toxic material, and he has only a common wound to contend with. We try to do the same thing with tannic acid dressings. Although the tannic acid coagulates the toxic material, it is still left on the surface. Besides, you have the frequent redressings, which are always painful to the patient.

At one of the clinics at the city hospital in Dresden they have discarded white sheets, towels, or gowns, and their color scheme is blue. The doctors dress in blue gowns, the operating room sheets are blue as well as all the towels. They claim it is much easier on your eyes and you are not so fatigued after a day's work.

In Cologne at the Lindeburg Hospital, which is a teaching hospital of two thousand beds, they use no gloves in their major operations, but the hands are washed in a soap mixture for five minutes.

A third way that quite a few doctors do in doing work in Europe, is to take six months to a year and obtain a position as an assistant in one of the large clinics, working in that particular department in which he is interested, be it surgery, medicine or any of the special branches. Many of the younger men, who after graduating from the school of their country and wish to broaden their views with men who are doing

*Read at a meeting of the Red River Valley Medical Society, at Warren, Minn., October 9, 1930.

things a little bit different take these positions; while older men who wish to change from general practice to a specialty, after completing special work in this country go to Europe and work in the departments in which they expect to specialize. Other men who wish only to brush up on certain subjects register for short intensive courses.

Special courses are given in a great many cities by a great many men who are famous in their specialty. In Vienna they have worked out these courses so that a doctor can get special work in practically every subject at any time. When a doctor arrives in Vienna he can go direct to the American Medical Association of Vienna, which is located in the Edison Café just across the street from the Allgemeines Krankenhaus, where he registers and pays a fee of ten dollars which entitles him to sign up for any of the courses. New courses begin most all the time, and are posted, stating who the teacher is, the general scope of the course, the number of hours the course lasts, and the number of students to which the course is limited, which ranges from two to an unlimited number. The instructor receives five dollars an hour, which is prorated to the number in the class. Where there are only two, it would cost each student \$2.50 an hour. For a ten hour course it would be twenty-five dollars apiece, but if there are twenty-five in the class, each student would only pay two dollars for the entire course. The arrangements for the course are made by the secretary of the Association with the instructor. When a course is posted you sign your name and as soon as the required number have signed the class begins. If the particular course in which you are interested is not posted, you may ask to have it posted so that a class may be formed. In case you do not wish to wait for a class to fill up, arrangements can always be made to take a private course.

As a rule the classes are small, five to ten men, whereby each one receives a good deal of individual instruction. The faculty of medicine also maintain headquarters near the Allgemeines Krankenhaus, and the director in charge will help to arrange courses of study. These courses are practically all given by men in the German language. Here there is no registration fee, although the instructor receives five dollars an hour. All doctors visiting at Vienna are at liberty to attend any operations in the amphitheatre even though they have not registered with the American Medical Association or are taking

private courses. In many of the hospitals one is allowed in the pit where he can see at close range all that is being done and the operator generally explains his work as he goes along. As a rule there is no aloofness or "better than thou" attitude among the professors, but they just meet you on common ground and wish to know what your practice is in your country.

Although courses are given in every subject in Vienna, from surgery by Dr. Demel to interpretation of dreams by the world famous psychologist, Dr. Adler, some courses are naturally more popular than others. I will mention only two or three that seem popular to me.

Gross pathology by Professor Erdhein, at the Jubiläums is very interesting and very popular. Even though this course is given in German, if one understands only a little German he gets a great deal out of it. A law in Austria permits autopsies in all of the hospitals, and from the wealth of material at his command Professor Erdhein is able to bring to his lecture a specimen of practically every known pathological condition. At the autopsy table under his supervision pathological conditions are removed. This may consist of the whole gastrointestinal tract, the whole urinary tract or the whole spine. These are placed in a refrigerator and brought to the lectures on the three afternoons of the week. At these demonstrations Professor Erdhein first reads a short history of the case, giving the symptoms the patient complained of, the laboratory tests, then the clinical diagnosis. Finally he demonstrates the pathological findings, showing how these findings could produce the symptoms complained of.

One afternoon he showed a large number of lungs, and demonstrated nearly every form of tuberculosis from the healed tubercle to the open cavity. Professor Erdhein is one of those rare teachers who brings to his lecture an enthusiasm in his work. No wonder his classes are always filled.

If the surgery in Europe is in any way superior to ours, it no doubt is due to the study of the fundamentals, physiology, anatomy, and pathology.

Another clinic at Vienna that is very popular at the present time is the clinic of Dr. Böhler, at the Worker's Accident Hospital. Dr. Böhler is assisted by Dr. Schnecke, a keen young man who speaks English very well, and is always pleased to show the work they are doing. Dr. Böhler has struck out along new lines of fracture treatment, and to see his work alone is

worth a trip to Europe. He uses local and spinal anesthesia for the reduction of fractures and dislocations, the advantages of which are that the patient does not dread the anesthetic, better relaxation, and you can check your reduction with the x-ray, if not satisfactory, do it over again. He does not use a great deal of diathermy, massage, or light therapy, but insists on a natural and comfortable position of the broken limb, and then instead of immobilizing the joint above and below as we have been doing, he insists on active and passive movements of the neighboring joints, believing that by exercising the muscles it will increase the circulation and speed up the healing of the broken bones. All the fractures are put up in plaster without padding, applying the plaster directly to the skin. Should any swelling occur, he at once splits the cast. It is a common occurrence to see patients with broken ankles walking in a few days. His apparatus is very simple, inexpensive, but practical.

No doubt some of you met Dr. Böhler during his recent visit to America and saw moving pictures of his work. The clinic of Professor Eiselsberg in surgery has been very popular. During the time I was there Professor Eiselsberg celebrated his seventieth birthday, and he thus retires as the head of the Eiselsberg Clinic. His place will be taken by Dr. Demel, who has been his first assistant for some time. On the day of his birthday all operations were suspended, and everybody connected with his clinic went out to spend the day with him. I was at the operating room when he performed his last operation. Eiselsberg was a student of Bilroth and carried out the teachings of this famous surgeon. I am told that the Presidency of Austria had been offered to Professor Eiselsberg, but he declined saying that he was more interested in medicine than politics.

While Vienna is the great teaching center of Europe for postgraduate work, many of the other clinics are giving courses in some particular line in which they excel, and it is worth while to visit these clinics. In Berlin, Professor Sauerbruch holds the spotlight and is doing a great work in chest surgery. He seems very radical and is a rapid operator. Dr. Bier, who a few years ago came into prominence by his Bier treatment of inflammations, is doing considerable work, and is always pleased to have you visit his clinics. Special courses in Bacteriology, Anatomy, Orthopedics, Pathology, Pediatrics, Surgery, etc., can be arranged by ap-

plying to the Medizinische Fakultät der Friedrich-Wilhelms-Universität.

Budapest is especially noted for its teachings in Pathology, Urology and Obstetrics. The doctors there are trying to compete with Vienna in developing a great postgraduate school. Special courses can be arranged by applying to the Hungarian Postgraduate Medical Committee who issue annually an Official Guide of Postgraduate Work in Hungary for English speaking physicians.

In Paris the faculty of medicine, which is a part of the University, has its headquarters in the medical school where an English speaking secretary is on duty who will give you directions as to the work that is in progress at the time of your visit or help you to obtain special courses. The Association for the Development of Medical Relations to which belong such men as Dr. Gros, Dr. Boyer, Dr. de Martel, is organized with the object of encouraging foreign doctors to come to Paris for postgraduate study. A great many short courses are given during the year. I am told the course in pathology at the cancer hospital is outstanding, while any one interested in Radiology would not fail to visit the Madam Curie institute where you are shown a great many cases of cancer and the application of radium.

In Berne, Dr. DeQuervain is still doing a great deal of work especially in goiter and stomach surgery. He is a fine man to meet and pleased to have you visit his clinic. The days I was there he stopped work in the forenoon and we went into another room where he had a bowl of soup between operations. He speaks English, French, and German, and explains his work as he goes along. By applying to the dean of the faculty of medicine, assistantships can be arranged in the various specialties. Men interested in goiter work find this place very profitable. At Frankfurt, Professor Schnieder is the head of a large clinic, connected with the city hospital, of several thousand beds. They have just installed a new x-ray department and do a lot of deep therapy with fair results.

Dr. Von Haber, at Dusseldorf, is doing good work in stomach surgery and is worth while seeing.

A man interested in surgical tuberculosis and treatment by heliotherapy should not fail to visit the clinic of Dr. Rollier. His clinic is about an hour's ride up into the Swiss Alps, from the town of Aigle, near Montreaux. A wonderful work is being done there. At the

present time there are about one thousand patients.

When you come to England you will find the medical center is London, where the Fellowship of Medicine is the clearing house for all that is taking place. The secretary in charge will direct you to the various hospitals where work is going on, or put you in touch with men who are giving special courses. This society is affiliated with about fifty hospitals, and over six thousand beds, so that the clinical material is almost unending.

In Liverpool the most interesting work is the course in Tropical Medicine. Being an important seaport with ships coming from all parts of the world they have a great amount of clinical material. The University confers two diplomas, one in Tropical Medicine and one in Tropical Hygiene. Each course is about three months duration.

Taking the various clinics of Europe as a whole you are impressed with the following facts: A clinic in Europe is an institution by itself and complete in its staff organization, a chief of the clinic by whose name the clinic is usually known, and a chief of each department as x-ray, pathology, etc. Sometimes the clinic will have a hospital to itself, while in others there may be two separate clinics in the same hospital group, but each will have its own x-ray, laboratories, and separate buildings as the Hocheneg Clinic and the Eiselsberg Clinic at the Allgemeines Krankenhaus at Vienna.

Especially in Germany the chief has very autocratic powers, as he is in direct charge of the patients in the hospital. The organization resembles very much the military type. On the days that ward rounds are made by the chief, he is surrounded by his chiefs of staffs and other minor men of the department, and it is a grand rush through the wards. The hospital buildings as a rule are built on the pavilion type, consisting of small buildings, rarely more than two or three stories in height. The buildings surround a central courtyard in which are, as a rule, beautiful flowers, trees, water fountains, etc. It is an ideal place for the patients to spend their leisure time. Each department is housed in a separate building, which may be connected with the other building or entirely separate. Some of these hospital buildings are very old, dating back from five hundred to one thousand years, so that at times the heating is done by stoves in the ends of the wards. There are very few private rooms, but most of the patients are

housed in large wards holding as many as one hundred patients. The operating rooms, as a rule, are large and airy, and very often contain two to three operating tables on which operations are performed at the same time.

Medical education is quite voluntary in the countries of Europe, especially in Germany. A student is not required to attend classes unless he wishes to, nor is he required to remain in one university all the time. The student selects his own instructors and the lectures and courses which he attends. He is at liberty to attend none if he chooses. The function of the university is to provide opportunities for learning, and students are free to take advantage of them or not, as they wish. There is no compulsion in the order, choice or duration of the studies to be pursued, except for the requirements of the different examinations.

The nursing is generally done by mature women, and you seldom find a young woman in the hospitals. The nurses have not that chic and neat appearance that you find in the hospitals of this country.

Some of the minor things that you will notice are:

Skin disinfection is mostly done by weak iodine solutions, which are not removed with alcohol.

Running sutures are very seldom used, but each stitch is tied separately and more silk is used than catgut.

Local and spinal anesthesia is the anesthetic choice in many clinics. For general anesthesia a mixture of ether and chloroform is frequently used. The use of avertin is quite popular in some clinics, especially in goiter surgery and operations about the face.

Removal of the stoneless gall bladder because it may some day have gallstones is not the universal custom.

In all the clinics that I visited I did not see over half a dozen appendices removed, nor did I hear the word chronic appendicitis.

Skeletal traction in fractures of the lower extremities has practically taken the place of skin traction by adhesive tape.

In conclusion, one may ask if the work in Europe does not differ very materially from the work in America. Is it worth the time and money to spend in foreign study?

My impression is that it is the best investment a doctor can make, by giving him a broader view of medicine in meeting personally the leaders of the other countries.

This is the second of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

BY LEO G. RIGLER

University of Minnesota

BONES AND JOINTS

NORMAL CHARACTERISTICS

A. Normal Structure

1. *Long bones* have a medulla, appearing as a clear area of lessened density in the center, a cortex, giving a very dense shadow at the periphery, and a periosteum which normally is not visible on the X-ray film. The ends of the long bones are cancellous showing no medullary cavity.

2. *Flat bones* are usually cancellous in structure, showing a homogeneous network of dense white lines surrounding very small areas of lesser density.

3. *The cartilage* normally is not visible in an X-ray film. The ends of the long bones are covered with cartilage.

4. *The joints*, therefore, appear as spaces between the bones, normally showing no shadow which is distinguishable from the soft tissues about them.

5. *Calcification* is normally found only in the costal cartilages, and occasionally in the laryngeal and tracheal cartilages.

B. Growth of Bones

1. *Gross Structure.* The long bones are composed of a diaphysis or shaft, one or more epiphyses usually at both ends. Between the epiphysis and diaphysis in the growing bone is a zone of cartilage which produces an area of lessened density—the epiphyseal line.

2. *At Birth.* The bony nucleus of the distal femoral epiphysis may be present. Other epiphyseal nuclei, such as the proximal humeral and tibial are occasionally present. The carpus is entirely cartilaginous, the tarsus only partially so.

3. *After birth.* The epiphyseal nuclei appear in a fairly regular succession in the different bones and a small area of density near the ends of the bones indicates their appearance. The nuclei of the carpal and tarsal bones gradually appear as dense areas also. It is very important to recognize these epiphyseal nuclei as they may produce confusion in cases of trauma.

4. *Epiphyses which frequently are confusing:*

- a. The epiphyses about the elbow joint, six in number.
- b. The epiphyses of the acromion process and the coracoid process of the scapula, and of the medial side of the clavicle.
- c. The epiphysis of the angle of the scapula.
- d. The epiphyses of the vertebral bodies.
- e. The epiphyses of the crest of the ilium, the tuberosity of the ischium, and of the acetabulum.
- f. The epiphysis of the tuberosity of the fifth metatarsal.

C. Normal Variations

These are too numerous to detail. A thorough familiarity with the normal variations is imperative for an appreciation of the boundaries between the pathological and the normal.

1. *Age changes.* Manifested by a roughening of the bones, especially in the pelvis and a decalcification, i. e., decreased density.

2. *Sex differences.* Female bones smaller, finer, the pelvis being deeper, broader, the fifth lumbar vertebra rising up far above the crest of the sacrum.

3. The presence of *sesamoid bones* and many accessory bones in the hands and feet.

4. Numerous *variations* in size, shape, structure.

5. Variations in the size of joints, their shape and appearance.

D. Value of X-ray Examination

The knowledge of the normal roentgen appearance of the bones and joints and their anatomical variations is important because frequently the distinction between normal and pathological is not clear. Normal anatomical variations are frequently mistaken for abnormalities.

TRAUMATIC CONDITIONS OF BONES AND JOINTS

A. Fractures

1. *Definition.* A fracture is a break in continuity of a bone. It manifests itself on the

X-ray film as a line of lessened density traversing the bone texture. If the fragments are displaced and overriding each other there may be an area of increased density. If the fracture is incomplete it may manifest itself as an irregularity of the surface, a "wrinkle" in the outline of the bone, often called a "greenstick" fracture.

2. *Information gained from X-ray examination in cases of bone injury.*

- a. Presence or absence of a fracture.
- b. The type of fracture.
 - (1) Greenstick or complete.
 - (2) Simple or comminuted.
 - (3) Transverse, oblique, spiral, longitudinal, stellate, fissured or depressed.
- c. The position of the fragments.
- d. The age of the fracture.
 - (1) A recent fracture will show:
 - (a) Swelling of the soft parts.
 - (b) The fracture line distinct and sharp.
 - (c) No bone atrophy.
 - (2) A two weeks old fracture will show:
 - (a) Little or no swelling of the soft parts.
 - (b) A hazy, blurred fracture line.
 - (c) Beginning atrophy of bone, i. e., decalcification manifesting itself as a diffuse decrease in density of the fractured bone.
 - (d) In children and occasionally in adults, beginning callous formation manifesting itself as a hazy, faint shadow irregularly deposited around the line of fracture.
 - (3) An old fracture of four weeks or more will show:
 - (a) No swelling of soft parts.
 - (b) Markedly blurred fracture line or no fracture line.
 - (c) Distinct bone atrophy.
 - (d) Marked callus formation manifesting itself as areas of new bone thrown out from the periosteal surface around the fracture, laid down parallel to the shaft.
- e. The degree of union by the extent of callus formation and obliteration of the fracture line.
- f. Whether the fracture is infected or not. An infected fracture will show absorption of the ends of the fragments and localized areas of rarefaction of decreased density near the fracture.
- g. Ununited fracture. This manifests itself by the presence of greatly increased density of the ends of the fragments and a marked increase

in the area of lessened density—the fracture line—between them.

h. Whether the fracture is pathological. By the presence of other changes in the bone near the fracture.

i. Whether or not the epiphysis is separated.

j. Whether dislocation accompanies the fracture.

k. As to the formation of callus. This varies with the age of the patient, the location of the fracture, the type of injury.

l. The results of treatment—whether reduction of the fracture is satisfactory and what the position of the fragments is at the end of the treatment.

3. *Characteristics of various fractures.* It is impossible to deal with all fractures in detail, but certain important points can be brought out.

a. The upper extremity.

- (1) Clavicle. Fractures may occur in any third, are often, in children, of the greenstick type. A fracture of the outer tip is often mistaken for an acromioclavicular dislocation.
- (2) Scapula. Fractures of the body are frequently missed because of the thinness of the bone. They tend to radiate with a number of lines in various directions. An oblique view often gives much information.
- (3) Humerus. Fractures of the greater tuberosity often occurs in association with dislocation. Every dislocation at the shoulder should be roentgenographed after reduction to determine if a fracture accompanied it. Fractures of the greater tuberosity must not be confused with calcification of the subacromial bursa. Stereoscopic films about the shoulder joint are valuable. Impacted fractures of the surgical neck may give only an area of increased density and show no fracture line.
- (4) About the elbow. Note that there are six epiphyses all present at the age of eleven or twelve.
 - (a) Fractures are frequent through the olecranon fossa in the young.
 - (b) Epiphyseal separation especially of the medial epicondyle of the humerus is common. The detached bony nucleus will be rotated and displaced to one side or the other.
 - (c) Fractures of the head of the radius are frequently overlooked. They

manifest themselves often only by a change in the curve of the neck of the radius, a sharp angulation appearing here, although the fracture line is invisible.

(5) About the wrist.

- (a) Epiphyseal separation of the radius is very common, especially with a fracture of the posterior lip of the radius and backward displacement of the detached fragment. Occasionally only a widened epiphyseal line is seen and this usually indicates that a separation was present which has been reduced.
- (b) Greenstick fractures are very common at the distal ends of the radius and ulna usually showing only some backward bowing without separation of the fragments.
- (c) Colle's fracture is exceedingly common. It is very important to note whether reduction is well done, whether impaction is present. The latter manifests itself by an apparent shortening of the bone and increased density in the region of the fracture. Lines should be drawn on the film parallel to the shaft and to the distal fragment to determine whether the angulation between them is very great. The relative positions of the styloid processes of the radius and ulna must be observed to determine whether shortening of the radius has occurred.
- (d) Fracture of the navicular bone manifests itself as a fine line of decreased density running through its center.

b. The lower extremity.

- (1) The pelvis. Fractures in the pubis are usually in the ascending ramus with one accompanying it in the descending. The junction of the pubis and ischium is normally very irregular so it may simulate a fracture.
- (2) Femur. The determination of the location of fracture of the neck, whether intra or extra capsular, is very important. The femur is often rotated as a result of fracture. This will produce an exaggeration of the lesser trochanter if the rotation is outward and of the

greater trochanter if the rotation is inward. Stereoscopic films in injuries about the hip joint are important. Occasionally an impacted fracture cannot be seen. After a few weeks, however, with absorption taking place, the fracture line may become evident. The question of union in fractures of the neck is difficult. Callus is seen very poorly even when union is complete, but a diagnosis of union without the presence of some new bone should not be made. In the case of fractures of the lower end it should be noted whether or not they extend into the joint.

- (3) The patella. In transverse fractures, the wide separation of the fragments makes diagnosis easy. Longitudinal fractures also occur and may be difficult to recognize as they show nothing in the lateral view. In the antero-posterior view the patella is superimposed upon the femur making it difficult to see. If the film is taken with the patella in contact with it, a longitudinal fracture may be demonstrated more easily. The "bipartite" patella, a normal variation, may be confused with fracture. It is bilateral so can be ruled out in that way.
- (4) Tibia and fibula. Fracture of the spines of the tibia may occur and may be difficult to detect. With fracture of the shaft of the tibia, there is usually a fracture of the fibula often higher up. It may be overlooked if an insufficient part of the leg is roentgenographed. The impacted fracture of the external condyle which is so common must not be overlooked.
- (5) About the ankle. Fractures through the external malleolus often are invisible in the antero-posterior view, but will be well seen in the lateral view. Occasionally an oblique angulation is necessary to bring them out.
- (6) In the foot.
 - (a) Calcaneus. Fractures are usually linear, may have multiple ramifications and tend to show impaction with increased density.
 - (b) The accessory scaphoid bone lying next to the navicular of the foot occurs normally in many indi-

viduals and must not be mistaken for a fracture.

- (c) Numerous other accessory bones are present in the foot as normal variations.
- (d) The epiphysis of the tuberosity of the fifth metatarsal, a small disc of bone lying parallel to the proximal end of the fifth metatarsal, appears at the age of thirteen and unites with it at the age of fifteen. This is often thought to be a fracture.
- (e) Bifid sesamoids frequently appear as a normal variation. Fracture of the sesamoids may however be present.
- (f) Fractures through the neck of the astragalus may appear as a linear area of lessened density with or without dislocation.

4. *Non-union of fractures.* The ends of the fragments are denser than normal but the space between them is wider than in the ordinary fracture, the edges of the bones being smooth, rounded off, thin. Atrophy with very little callus may indicate non-union early. Bone ends should be examined for evidence of tumor formation.

5. *Operative findings.* The installation of metal plates and bands is very obvious. About the edges of these appliances absorption of bone can be made out. Increase in these areas of rarefaction is an indication of local atrophy which may become infected. Bone grafts usually appear as dense areas within the medulla or along the cortex depending on the type of graft. There is always absorption, i. e., rarefaction about them due to pressure and this must not be mistaken for osteomyelitis.

6. *Infected fractures.* Osteomyelitis developing upon a fracture evidences itself as areas of rarefaction with new bone formation. The latter is distinguished from the normal callus formation by the irregularity of its growth.

7. *Periosteal tear and traumatic periostitis.*

a. Occasionally a type of injury will produce a fragmentation of bone with tearing of the periosteum. Only a very small shadow can be seen separate from the shaft of the bone at first. As healing takes place, however, a large shadow may occur due to the callus formation from the torn periosteum.

b. A severe injury to a bone may show no X-ray findings at all immediately after but within ten days or so evidences of periostitis may ap-

pear, calcium being laid down in the periosteum from the injury. A faint linear shadow parallel to the shaft of the bone is shown.

8. *Value of X-ray examination in fractures.* Roentgen examination of bones after injury is absolutely indispensable, frequently revealing fractures which were entirely unsuspected. Adequate treatment cannot be given without repeated X-ray examination to check the results and aid in making corrections whenever necessary.

B. *Dislocations*

1. *Acute dislocations* are not commonly seen as they are usually reduced before coming for X-ray examination. The wide separation of the bones, the overriding, and the malposition identifies them readily.

2. *Chronic or recurrent dislocations* may reveal the cause on X-ray examination. This is well shown in the case of separation of the glenoid cartilage which after a period of time may become calcified and reveal the cause of a recurrent dislocation of the shoulder.

3. *Congenital dislocation* can be identified by the high position of the femur. The epiphysis for the head may not yet be present but the axis of the neck will be directed above the acetabulum. The formation of a false acetabulum above the normal one and the flattening out and shallow character of the latter can also be seen. The epiphysis itself may show flattening due to the abnormal pressure.

4. *Slipped femoral epiphysis* shows a separation and rotation of the proximal epiphysis of the femur. It tends to occur after slight trauma, usually in rather stout, effeminate boys at the age of puberty. Its replacement to normal position can only be definitely determined by roentgen examination.

5. *Secondary dislocations* may occur from joint diseases such as tuberculosis, purulent arthritis, or Charcot's disease. The evidence of the primary condition will usually be apparent.

6. *Value of X-ray examination in dislocations.* Roentgen examinations in suspected dislocations is of utmost value in establishing the diagnosis as a certainty. In cases where the dislocation is obvious clinically, roentgen examination should be made to determine whether or not fracture accompanied the dislocation and whether reduction has been complete. In the chronic, congenital, and secondary dislocations roentgen examination is the most important single factor in diagnosis.

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1643.

A white man, 45 years of age, was admitted to hospital on October 29, and died on November 4. He complained on admission of dyspnea and edema of the lower extremities. He gave an indefinite history of swelling of both knees at the age of 23. The joints were red and swollen and slightly tender. He had no generalized illness at that time. The condition persisted for approximately one month and then cleared up. From that time he was well until six years before admission when he first noticed that his heart missed occasional beats. One year later he noticed definite palpitations and that he tired easily doing his regular work. He was a farmer. He saw a physician and was told that his heart was normal. Two years before admission to the hospital he visited a doctor again and was told that there was a definite valvular leakage. For a year to eighteen months at that time he had orthopnea. These conditions gradually grew worse during the six years and on any severe exertion he had marked air hunger. Six weeks before admission he noticed that his ankles were swollen at the end of a day's work. The swelling disappeared following rest in bed at night. The swelling gradually rose from the level of the ankles over the entire lower extremities and trunk. He had not noticed any loss of weight. Some eighteen months before coming to the hospital he was given tincture of digitalis, five drops t. i. d. being prescribed, but he did not think that this relieved him much. Twelve months before admission he commenced taking thirty drops per day and this gave him partial relief. He had his blood pressure taken for the first time fourteen months before admission; the systolic pressure was 120. Two months before admission the reading was 140. He had been working until admission to the hospital except for lapses of two or three days to gain strength.

He had chicken pox and measles during childhood: diphtheria at 15, and a fracture of one leg at 14. He noticed enlargement of the jugular veins eight months ago and they had been swollen and painful since that time. For six months he had been raising thick sputum and had considerable cough. Six weeks before admission the sputum was scanty, yellowish, and hard to raise. He also noticed night sweats for a period of one

month eight years ago. His appetite was good until one month before admission, when it failed. The remaining history is essentially negative.

Physical examination. Blood pressure 140/80. Patient required a back rest because of orthopnea; was very dyspneic and coughed considerably, raising a watery sputum with great difficulty. The sputum was tinged with blood. There were râles in the left posterior base. The heart was irregular; apical rate 128; the radial pulse 105. At times the pulse was very weak. There was a systolic thrill and enlargement of the heart to the left, by percussion; a loud systolic murmur over the apex transmitted to the left axilla, loudest in the sixth and seventh interspaces, four cm. outside the nipple line. Abdominal ascites was considered possible. The liver was two cm. below the costal margin and there were no nodules or tenderness. The spleen was not palpable. No abdominal masses palpable. There was pitting edema of the lower extremities to the crest of the ilium. The prostate was large but smooth. There were no masses about the rectum.

October 30 urinalysis showed specific gravity 1010, acid; no sugar or albumin; negative urinary sediment. Blood: hemoglobin 95 per cent; white cells 16,000; 92 per cent polymorphonuclears, 6 per cent lymphocytes, 2 per cent monocytes. The blood urea nitrogen on October 31 was 42 mg. White cells on November 3, 18,350.

Portable plate on November 1 indicated that there was a probable mitral heart; possible beginning pneumonia in the left base or effusion in the left base; old fractures of the eighth and ninth ribs on the left.

Patient was placed on a back rest. Euphyllin gr. one and a half, ammonium chloride gr. 20, tincture of digitalis given repeatedly. Morphine sulphate gr. one-fourth, and atropine sulphate, 1/150, were given repeatedly. Homatropine, 2 per cent, 1 drop to each eye. Venapuncture was performed. Theocin grains five was given; diuretin grains seven and one-half t. i. d.; codeine sulphate grain one repeatedly. S. S. enemas. Luminal grain one; digalen, one cc. Blood culture taken. Oxygen tent started. Caffeine sodium benzoate grains seven and one-half.

Nurses notes. Admitted October 29; very dyspneic, weak, and tired. He had emesis of 300 cc. of yellowish fluid; seemed very uncomfortable. October 30 re-

peated emesis. He expectorated some blood with severe coughing spells. Pulse rapid and patient unable to rest. The thirty-first he again had a severe coughing spell; considerable dyspnea and expectoration of blood streaked sputum. November 1 considerable blood streaked sputum; complained of gastric distress; pulse was rapid; appetite poor; he coughed severely at times.

The second he was very dyspneic; skin appeared jaundiced; slightly irrational at times; very restless. The third he perspired a great deal; mucous in the throat; respirations very labored. Death the fourth. 12:15 P. M.

Progress notes. October 30 the staff concluded that there was chronic valvular disease with myocardial insufficiency. November 3 the patient was much worse, running a temperature of 101.2°, Cheyne-Stokes respirations, many coarse, bubbling râles in the anterior and posterior left chest. The heart was rapid, all tones apparently being replaced by murmurs.

Post-mortem report. Marked edema of both lower extremities as high as the iliac crest. Marked cyanosis. No jaundice. Ascites, 300 cc. of clear fluid; left hydrothorax, 200 cc. of clear fluid. Heart weighs 730 grams; transverse measurement, 18 cm.; marked hypertrophy of the left ventricle; hypertrophy of the right ventricle; dilation of all the chambers; aortic valve leaflets thickened, indurated, and retracted; a number of fresh rheumatic vegetations on the old scarred aortic leaflets. The mitral leaflets are definitely thickened and somewhat retracted. Anatomically there is aortic stenosis and insufficiency and mitral insufficiency. The left lung weighs 700 grams, the right 1,250 grams. Both lungs show a number of large fresh infarcts, two to six cm. in diameter; no pneumonia. The spleen weighs 125 grams and shows many infarcts, most of which are old. Marked chronic passive congestion of the liver. Kidneys normal except for passive congestion.

Diagnoses: 1. Old rheumatic valve defect (aortic and mitral) giving rise to aortic stenosis and insufficiency and mitral insufficiency. 2. Recurrent rheumatic aortic endocarditis. 3. Chronic passive congestion of the viscera. 4. Multiple infarcts of the lungs and spleen.

Comment. The patient presumably had an attack of rheumatic endocarditis at the age of 23, which gave rise to his old valve defect. Shortly before death he had a recurrent attack of rheumatic endocarditis. Death was due to heart failure.

Autopsy—30—1735.

The case is that of a man 22 years old. In September, 1929, the present illness began with pain in the right upper quadrant of the abdomen, which was colicky in character, associated with nausea and vomiting. Following this initial attack he had a dull pain in the epigastrium which was present continuously. He soon became jaundiced, and said that a physician told him at this time that his liver was as far down as the umbilicus. He was first admitted to hospital in February, 1930, at which time his icterus index was 96. Stools were clay colored. X-ray of the stomach showed marked displacement to the left and posteriorly by an extragastric tumor. No tumor could be palpated. The gall bladder was not palpated. The liver margin was several centimeters below the costal margin.

February 3 exploratory laparotomy was performed but no further operative procedure (the findings will be given at the end of this report). He was discharged

from the hospital, but returned in May with his condition approximately the same. There was marked jaundice with an icterus index of 72. A tumor mass was palpated in the epigastric region. Bleeding time, seven to eight minutes; coagulation time, seven minutes, ten seconds. Intravenous calcium chloride did not improve the condition. He had gained 15 pounds since the exploratory operation.

He was discharged after a few weeks but readmitted in July. There was no change in his condition except that he now had abdominal distension, and it was because of the discomfort from this that he returned to the hospital. He was discharged after a short stay and readmitted November 3. At this last admission he was deeply jaundiced; the skin was very dry. There was photophobia and a sluggish reaction of the right pupil to light. Excoriations over the anterior part of the nose; dry lips and dry tongue; carious teeth. Examination of the chest revealed prominent interspaces. Respiration was rapid and shallow. There was diminished tactile fremitus below the third interspace on the right side anteriorly, and also over the right inferior lobe of the lung. The apex beat was palpable one half inch medial to the nipple line in the fourth left interspace. Percussion revealed dullness below the third interspace on the right anteriorly, and the upper portions of both lungs were hyperresonant. The heart sounds were distant on auscultation. The abdomen was markedly distended. There were many dilated veins and capillaries over the abdominal wall. A firm nodular mass was palpable in the right upper quadrant (apparently the liver). There was a demonstrable fluid wave. Rectal examination was negative. Watch crystal nails were noted. The patient complained of abdominal pain.

November 4, hemoglobin was 47 per cent; red cells 3,380,000; white cells 9,900; polymorphonuclears 84 per cent; lymphocytes 11 per cent; monocytes 3 per cent; basophils 2 per cent. Smears showed hypochromasia, slight polychromatophilia, and anisocytosis. November 7 bleeding time five minutes, clotting time nine minutes. Icterus index 60. November 12, blood urea nitrogen 25.2 mg. Wasserman negative. The patient complained of dyspnea.

November 13, 13,200 cc. of fluid removed from the abdomen; the fluid was clear and bile stained. The patient seemed more comfortable. He coughed at intervals during the day and did not have abdominal pain. November 15 he appeared much weaker; he coughed a great deal and complained of weakness and dyspnea. November 18, a mass was palpated across the midline of the abdomen in the epigastric region. The mass was independent of the liver. November 19, the icterus index was 56. Blood urea nitrogen 41 mg. Patient developed hiccoughs. His memory became poor and he was somewhat irrational.

November 20 his arm became cyanotic. Respirations were rapid and shallow but his pulse was fairly strong. Later in the day Cheyne-Stokes respiration began. Death 6:20 P. M., November 20.

Numerous urinary examinations showed specific gravity around 1020; acid reaction; no sugar; no albumin; occasional hyaline casts; bile present; no urobilin; no urobilinogen.

Post-mortem report. Intense jaundice; marked emaciation. The peritoneal cavity contains 1000 cc. of dark yellow, clear fluid. The omentum is rolled up about the greater curvature of the stomach and adherent to the laparotomy scar. This is evidently the epi-

gastric tumor that was palpated. The appendix showed no disease. 300 cc. of clear fluid in the right pleural cavity. The heart weighs 300 grams; the myocardium is soft and friable but there is no evidence of necrosis or fibrosis; no valvular disease. The lungs show moderate edema; old healed tuberculosis in the lower portion of the left upper lobe.

The spleen weighs 480 grams. The enlargement is apparently due to passive congestion.

The liver weighs 4125 grams. In its left lobe is a tumor 12 cm. in diameter. The tumor has compressed both hepatic ducts and invaded the hepatic ducts, the common bile duct, and the gallbladder. These structures are all distended, due to the growth of the tumor into their lumens. Microscopic examination shows the tumor to be a carcinoma of the liver.

Diagnosis. Primary carcinoma of the liver with obstruction of the hepatic ducts and the common bile duct.

At the exploratory operation in February, 1930, the surgeon saw and palpated the tumor, which he regarded as a primary carcinoma of the hepatic ducts.

Comment. Primary carcinoma of the liver is a rare tumor, particularly in persons of this age. The tumor was obviously inoperable at the time of the exploratory laparotomy.

SYPHILIS*

(Continued from Page 172)

It is always neutralized before use. Neoarsphenamin can be given immediately. The dosage between the two; .6 of neoarsphenamin corresponds to about .45 of arsphenamin.

Of the two newer ones brought out, sulpharsphenamin has proven most popular. The characteristic thing about sulpharsphenamin is that it may be given by subcutaneous and intramuscular injection. Silver arsphenamin is used particularly in people who react disadvantageously toward arsphenamin and neoarsphenamin. Sometimes people who get skin rashes after neoarsphenamin can take the silver arsphenamin quite nicely.

If there are any questions you would like to ask, I will be glad to answer them for you. I am sorry I did not have the opportunity to go into the subject more in detail.

The treatment of skin diseases almost appears as simple as Dr. Isaac Abt of Chicago once jokingly explained to me, "Given a patient with a rash, the first thing you do is take blood for a Wassermann. If the report comes back positive, treat him for syphilis; if the report is negative, see the patient again and if the lesion is dry, put on something to wet it up, and if wet something to dry it up."

A NOTE ON NONSUPPURATIVE LABYRINTHITIS

By C. d'A. WRIGHT, M.D.

MINNEAPOLIS, MINNESOTA

Nonsuppurative labyrinthitis, both circumscribed and diffuse, is accountable for much more vertigo and dizziness than is credited to it. It is more prevalent than is generally believed and often passes undiagnosed. The symptoms are orientation discomforts, sometimes great prostration, better hearing for low tones than for high ones, Rinné remains positive and Webber is generally to the diseased side. There is no change in the spinal fluid or blood picture.

Now, add to this picture a negative Rinné, deafness for low as well as high tones (when the cochlea is involved), marked difference in after-nystagmus, with a presence of spontaneous, horizontal or rotary nystagmus (for a few hours, at least) to the diseased side, and afterwards to the sound side, and you have the first picture of suppurative labyrinthitis, which when fully under way gives impaired nerve apparatus as proven by vestibular tests, nausea, vomiting, and often severe prostration; pain similar to otitis media if only the vestibular portion is involved, with characteristic loss of hearing and extremely severe pain if the cochlea is involved. With a concurring spinal fluid you have indications for labyrinthine surgery.

The etiology of suppurative labyrinthitis is not as dependent on otitis media as has been held. It may occur following scarlet fever when the internal wall of the tympanum is left intact. It results from extradural abscess or from infection in any part of the temporal-bone (osteophlebitis). It occurs with basal infection by way of the arterial sheaths, principally the auditory artery, or by way of the perineural sheath of the facial or one of the many openings of the internal auditory nerve. It may occur as a primary affair.

In the last two weeks I have seen a case in which nonsuppurative labyrinthitis returned often enough in five years to incapacitate a physician from his usual work. He would have seizures, dizziness, prostration, dull hearing, nerve apparatus irritation, though the process never went on to suppuration.

The cleaning up of an old tooth root infection, overlooked for a long while, remedied the whole condition.

I think we may make a statement that infective foci in any part of the body can produce a suppurative labyrinthitis. It can produce a suppurative choroiditis, as shown by reports of various cases from physicians all over the world in the issue of November first.

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STATE MEDICINE

Preventable illness is causing enormous economic waste in the United States and the public has a right to expect leadership from the medical profession in cutting down that waste. A study of modern economic conditions as they affect medical practice in America should be made by organized legitimate medicine.

This was the consensus of the Northwest Regional Conference of Physicians, expressed Sunday, February the eighth, in a series of recommendations to be sent to the American Medical Association and to every county and state medical association in the Northwest.

Representatives of seven states, including Minnesota, Wisconsin, Iowa, North and South Dakota and Montana, were present.

Not so many years ago, public health was almost completely ignored. In medicine and in politics alike, the state was considered an aggregate of individuals. The sick accepted their illness as a natural part of their work and their misfortune and something which could not be avoided.

More recently the importance of preventive medicine has been realized and more attention given to habits and working conditions of people in everyday life. Improved methods in diagnosis and treatment have been taken advantage of to improve the general health.

Accompanying these developments in medicine, the government has also made advances and concerned itself more and more with the public health. The parental rôle of the state has grown

rapidly and now begins to assume menacing proportions.

It is reasonable to question if the result of this tendency is as good as its purpose. There is no doubt that a constructive policy on the part of the state is desirable, although one might question whether the standardized methods of the state can bring about the desired result.

Individuality is one of the most conspicuous attributes of a human being. Men are distinctly different. No two of them are ill in the same way. With the same disease, pain may be present in one and absent in another. The same medicine will not always give relief to both. The textbook description of a disease is only an average. The doctor must consider the personal factor, which is the most difficult part in the practice of medicine. If it is necessary for the physician to consider the personal factor, it will be equally necessary for the state to take the individual problem into consideration. It may justly be asked then, if the state can appreciate the varying needs of separate men.

In a few, initiative and effort are inborn, while in the majority, the stimulus of necessity is needed.

Assistance may help one man and damage another. Dr. Clay R. Murray, Professor of Orthopedic Surgery at Columbia University, in an address before the Minneapolis Surgical Society on February fourth, when discussing the economic factor of the recovery period from fractures, made the apt remark that "there is no habit so easily developed as the habit of doing nothing."

Control and care by the state in sickness and in accident tends to destroy individual interest in the patient, tends to become mechanical and to create a cost disproportionate to the results obtainable. Because personality and individualism need valuation, would not the state fulfill its function better by direction rather than by administration? This might be achieved by placing in

charge of social agencies men who have expert knowledge and human understanding and not mere sentimentality. What is needed to solve the problems of health are trained men, not a massive organization. The state claims from each citizen positive allegiance, not negative acceptance.

M. N.

THE ART OF MEDICINE

Both science and art, in proper proportions, enter into the best practice of medicine.

Because scientific discoveries have almost entirely been responsible for advances in modern medicine, it is not surprising that greater emphasis has been laid upon the former to the detriment and neglect of the latter. The "show me man" of science is trained to require definite proof demonstrable to and perceptible by the senses. In this attitude he is entirely right, because he is dealing with material things. The practical application of knowledge and skill to any given problem or case, however, is art, and it must be so classified even in the practice of healing whether one is dealing with an organic or a functional disorder. Another reason, too, why there has been aversion to the practice of art in medicine may be found in the fact that it has been the chief asset of the quack, who, lacking scientific training, resorts to deception and cunning, prostituting art to stand for fraud, boastfulness and even false promises. This, however, should not cause us to lose sight of its rightful use in legitimate medicine.

As physicians we are not dealing with disease alone but with human beings afflicted with such disease, and this calls for art. There is one thing in which people are alike and that is that they are all different. They resemble each other in their dissimilarity. We should remember then, that, while the disease may be treated the same, individuals must be treated differently. We should not forget that the patient appraises the doctor whom he is consulting, and impressions may be of great consequence. It is important that the patient's mental attitude be understood in the application of scientific knowledge. Science is concerned with the malady. Art must consider the individual in administering to his personal interests. A knitted brow, an absent-minded or perplexed expression will do no harm in the presence of test tubes and laboratory apparatus alone, but may cause much misgiving, lack of confidence, and actual damage when an apprehensive and impressionable human being is allowed to observe them.

Intense personal interest in the patient at hand is a most important and proper art that makes for success and helpfulness, and he who becomes so absorbed in science as to neglect it needs a vacation or a change of viewpoint.

A. E. H.

POLIOMYELITIS

The successful control of poliomyelitis has awaited discoveries of medical investigators, and during the past twenty years considerable progress has been made. As a result of previous investigations the disease is generally thought to be caused by a specific filterable virus, which is directly transferable from person to person. When infantile paralysis occurs as a result of such transfer, the patient's blood serum develops antibodies which Felix and Lewis, and Levaditi and Landsteiner demonstrated twenty years ago are capable of neutralizing the poliomyelitis virus. Since that time convalescent human serum has been employed prophylactically and therapeutically with success. Unfortunately the supply of convalescent serum often is rather limited at times when urgently needed. An immense reservoir of immune poliomyelitis serum constantly present in our adult population may have been uncovered recently by Aycock and Kramer, who found that immunity to the disease as indicated by the ability of an individual's blood serum to neutralize the virus is widespread among adults not known to have had the disease, an immunity acquired presumably from an exposure to the virus without the subsequent development of recognizable forms of infantile paralysis. Should later observations demonstrate the immune serum of adults not known to have had the disease to equal known convalescent serum in therapeutic effectiveness, the shortage of immune poliomyelitis serum will immediately disappear, and the physician will be placed in an excellent position to greatly benefit patients seen in the preparalytic stage of the disease, merely through the administration to the afflicted individual of the blood from two or more adults selected at random. The situation then can be further improved by serologic identification of large numbers of immune adults before emergencies arise.

Our knowledge of infantile paralysis has passed through certain stages to the point that now the communicability, etiology, and the effectiveness of convalescent serum are fairly well understood, and the final stage, namely that of active immunization may be reached in the near future. In 1930, Rhoades demonstrated that by means of a single large dose of poliomyelitis

virus, distributed at a number of intradermal sites, active immunity is produced in *Macaca rhesus* monkeys, as shown by neutralization and intracisternal tests. In a small series of monkeys treated in this manner, neither abortive nor paralytic signs of experimental poliomyelitis appeared. More recently Rhoades has discovered that the poliomyelitis virus is inactivated by suspensions of aluminum hydroxide. The virus inactivated in this manner is incapable of producing poliomyelitis, but retains the power of inducing an active immunity in *Macaca rhesus*. In only one of a small series of animals thus immunized was the

degree of immunity insufficient to afford protection against intracerebral injections of the virus. The present generation thus may witness another medical triumph similar to that seen in the past with regard to diphtheria. The day may not be far distant when not only shall we conquer the blight of infantile paralysis with antipoliomyelitis serum, but also prevent the disease by active immunization.

C. A. S.

The following articles from current literature contain fuller information on this subject:

Aycock, W. L., and Kramer, S. D.: *Journ. Preventive Med.* 4: 177-250, May, 1930.
Rhoades, C. P.: *Jour. Exp. Med.* 51: 1, 1930.
Rhoades, C. P.: *Science* 72: 608 (Dec. 12) 1930.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.
Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

March thirty-first is our cut off date. All 1930 birth and death certificates must be in at that time to be counted in our annual tabulations. To make a correct health picture of North Dakota, every certificate counts. Heretofore we have waited six months after the close of the year to allow certificates to be filed so that we could count them. Last year when we began our 1929 tabulations, in June, during the short time we were engaged in this work, 57 death certificates were received, and they are still coming. Over 200 birth certificates for 1929 have been received since our tabulations were made, and they are still coming in. We have used every courteous means at our disposal to have births and deaths recorded at the proper time. The law is very simple and plain. WITHIN THREE DAYS after a birth, a certificate must be filed with the local registrar. If we ever started to enforce this law strictly the state's attorneys of 53 counties would be kept busy day and night. This year all registrars are instructed to date all certificates the day they are received. This will enable us to make a study of the situation and see where the difficulty lies. In the meantime, if you have any 1930 certificates which have not been sent in, please send them in NOW.

Child Hygiene Activities

During the year 1930 the Division of Child Hygiene held 130 preschool conferences at which 2,718 mothers attended and 3,985 children were examined. These conferences were conducted by a physician and a nurse from the Division. Of the 3,985 children examined, only 150 had been immunized against diphtheria and only 274 had been vaccinated against smallpox.

Another Angle of the Cause of Death

In investigating 1930 fatal accidents, 24 queries were sent out because we could not tell whether the death was caused by accident, suicide, homicide or natural causes. "Obstruction of the Bowels" and "Intestinal

Obstruction" often disclose, on query, a hernia or ruptured appendix as the real cause of death, or that deceased was kicked by a horse, which makes the death accidental. "Fractured Skull" may mean a fall, auto accident, etc. "Gun Shot Wound" may mean suicide, homicide or accident. It should be qualified by the word "accidental" if an accident, and should state whether the gun was in the hands of deceased or another. "Killed by a Train" should also be qualified. Was deceased a pedestrian, in an automobile or killed while at work? The new form of death certificate was designed to meet this situation and if adhered to we expect it will eliminate a lot of correspondence.

Recent Advances in Diagnosis and Treatment of Pneumonia

To make correct use of the modern specific treatment for pneumonia, which now seems so promising, diagnosis must be made at the earliest possible moment. The ordinary clinical entity of chills, sharp pain in the side, cough, with pinkish expectoration and a diminution of breath sounds with moist râles in an infected lobe is evidence of an early lobar infection. X-ray, when available, is of aid. The white blood count in ordinary pneumonia runs from 12,000 to 25,000 with a polynuclear leukocytosis of 80 to 90 per cent.

The early typing of sputum is essential because of serum treatment possible in many cases. Actual presence in the throat of a form of pneumococci, especially types I and II is evidence of pneumonia, for few healthy throats show these types. The typing of sputum can only be carried out where adequate laboratory facilities are available. A rapid method of sputum typing has recently been developed, being an agglutination test similar to a Widal Reaction, and yields a laboratory report in three hours. If sputum cannot be obtained, a blood culture should be taken.

Type I, the most common, is the pneumonia of young people, runs a mortality rate of 20 to 30 per cent and

tends to develop empyema twice as frequently as do other types. Type II is the pneumonia of septicemia, is the most severe form and runs a death rate of about 50 per cent; more frequent in younger people. Types I and II are more frequent in men than in women. Type III is the pneumonia of elderly people, particularly women, is very severe, and carries a mortality rate of from 40 to 50 per cent. The incidence of pneumococcus types and the mortality rate depend a great deal upon age and sex. Type IV is a group of pneumococci of many types.

Streptococcic pneumonia is comparatively rare. It usually occurs in the late winter or spring, carries a mortality rate of from 35 to 40 per cent and shows a high incidence of empyema. Recent data show a death rate 10 per cent higher in patients receiving digitalis therapy promiscuously. It is now believed that digitalis should be limited to those cases which show evidence of previous myocardial disease. Alcohol should be used only in alcoholic patients. Caffein and adrenalin are favorite stimulants.

Abdominal distension is relieved with pituitary extract, soap-suds enemas and turpentine stupes. Pain and cough are best relieved with codeine or morphine. The latter is particularly valuable in the early stages and

there is little evidence that it increases cyanosis. In cyanosis due to anoxemia, oxygen therapy by chamber or tube affords the patient comfort and is rational.

Concentrated antipneumococcus serum Type I and Type II is preferable to ordinary Type I and Type II serum. Concentrated Type II serum is not so brilliant in its therapeutic effect as concentrated Type I, but should be used.

Type I pneumonia is successfully treated with concentrated serum even as late as the third or fourth day. However, the earlier serum treatment is established the better. In Type II, however, serum therapy is not worth while after the third day. For Types III and IV there is as yet no worth while serum treatment.

In case the sputum cannot be typed, one is justified in administering polyvalent serum to a young man or woman with an untyped pneumonia, because in two out of three the pneumonia would be Type I or II. In older patients, of 60 years or more, two out of three cases would be Type III or IV. Therefore the chances are against serum treatment being indicated. One is justified in consenting to serum treatment without bacteriologic examination in a young person but not in an old one.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of January 14, 1931.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 14, 1931. Dinner was served at 7 o'clock and the meeting was called to order by the President, Dr. J. S. Gilfillan, at 8 o'clock. There were 41 members and 1 visitor present.

Minutes of the December meeting were read and approved.

The President appointed a Committee, consisting of Dr. J. F. Fulton (Chairman) and Drs. Geist and F. R. Wright, to draw up resolutions on the death of Dr. F. A. Dunsmoor.

Upon ballot the following men were elected as candidates to the Academy:

Saint Paul—

Dr. Max H. Hoffman

Dr. John F. Noble

Dr. Clayton K. Williams

Minneapolis—

Dr. Moses Barron

Dr. Kenneth Bulkley

University—

Dr. Irvine McQuarrie

Dr. O. H. Wangenstein

DR. EMIL S. GEIST (Minneapolis), retiring President, then read his Presidential Address en-

titled "The Intervertebral Disc." This was illustrated by numerous lantern slides. There was no discussion of the paper.

The meeting adjourned.

R. T. LA VAKE, M.D., Secretary.

FEEDING OF GASTRIC TISSUE IN TREATMENT OF PERNICIOUS ANEMIA

Sixty patients who have pernicious anemia have been treated by H. MILTON CONNER, Rochester, Minn. (*Journal A. M. A.*, Feb. 14, 1931), with gastric tissue of swine or with tripe. Two of these were given gastric tissue of swine after virtual failure with tripe, and tripe constituted the sole form of gastric tissue given to two. Forty-six of the patients have been carefully studied under observation in a hospital. Raw and dried preparations have given approximately equivalent results. The mucosa, the remainder of the stomach after the mucosa was removed, and whole gastric wall were used separately, and each proved effective in the cases treated. The presence of muscle meat was not required to obtain results in the two cases treated with mucosa without muscular coat or other muscle meat. Fundus and pylorus, each used separately, produced satisfactory if not equal results. The effects on the reticulated erythrocytes, mature erythrocytes, hemoglobin and leukocytes are similar to and apparently equivalent to those obtained by feeding liver or liver extract. The effects on the general and neurologic symptoms are apparently about the same as those obtained with liver or its extract.

SIOUX VALLEY MEDICAL ASSOCIATION

Sioux City, Iowa, Jan. 20-21, 1931

The Thirty-sixth annual winter meeting of the Sioux Valley Medical Association was held at Sioux City, Iowa, January 20 and 21, 1931. Three hundred physicians registered for attendance at the two-day session of dry clinics, papers and discussions and the program was widely acclaimed.

The program was presented as follows: "A Heart Clinic" by Dr. Frederick A. Willius, Chief of the Section on Cardiology, Mayo Clinic, Rochester, Minn.; "A Pediatric Clinic," by Dr. Wm. McKim Marriott, head of the Department of Pediatrics and Dean of the Washington University Medical School, St. Louis, Mo.; "A Clinic on Hand Contractures," by Dr. Sumner L. Koch, Associate Professor of Surgery, Northwestern University Medical School, Chicago, Ill.; "A Urological Clinic," by Dr. Frederick Eugene Foley, of the Department of Urology of Minnesota School of Medicine, St. Paul, Minn.; Dr. A. D. Dunn, Professor of Experimental Medicine of the Medical College of the University of Nebraska conducted a clinic and presented a paper with lantern slides and specimen exhibits on "The Relation of Sinus Infection to Systemic Disease," and the following papers were presented: "Acquired Contractures of the Hand," by Dr. Sumner L. Koch, Chicago, Ill.; "Some Principles Underlying the Treatment of Heart Failure," by Dr. Frederick A. Willius, Rochester, Minn.; "Oxygen and Carbon Dioxide Variations Accompanying the Relief of Pain," by Dr. Ralph M. Waters, Associate Professor of Surgery (Anesthesia), University of Wisconsin Medical School, Madison, Wis.; "Allergy as Related to the General Practitioner," by Dr. W. W. Duke, Kansas City, Mo.; "Some Practical Points in the Care and Feeding of Infants and Children," by Dr. W. McKim Marriott, St. Louis, Mo.; "The Different Types of Anemias; Their Diagnosis and Treatment," by Dr. Raphael Isaacs, Associate Professor of Medicine of the University of Michigan and Assistant Director of the Thomas Henry Simpson Memorial Institute for Medical Research of the University of Michigan, Ann Arbor, Mich.; "Surgical Treatment of Hydronephrosis; A New Operation for Stricture at the Uretero-Pelvic Junction," Dr. Frederick Eugene Foley, St. Paul, Minn.; "Some Aspects of the Treatment of Carcinoma and Angioma With Radium and Radon," by Dr. Frank Edward Simpson, Adjunct Clinical Professor of Dermatology, Northwestern University Medical School, Chicago, Ill.; "The Physiology and Pathology of the Parathyroid Glands," by Dr. Arno B. Luckhardt, Professor of Physiology, University of Chicago, Chicago, Ill.; "Focal Infection and Elective Localization," by Dr. Edward C. Rosenow, Head of Department of Experimental Bacteriology at Mayo Foundation and University of Minnesota, Rochester, Minn.

The banquet was held the night of January 20, when a capacity crowd of physicians and their wives enjoyed musical entertainment during the dinner hour, which was followed by a program of short talks with Dr. Lucian Stark of Norfolk, Nebr., President-elect of the Nebraska State Medical Society, presiding as toastmaster. The following responded with talks: Dr. J. C. Ohlmacher of Vermillion, S. Dak.; President of the Sioux Valley Medical Association; Dr. J. B. Naftzger of Sioux City, Iowa, President of the Woodbury County Medical Society; Dr. Frederick Roost of Sioux City, Iowa, Secretary of the Sioux Valley Eye and Ear Academy; Dr. K. S. J. Hohlen of Lincoln, Nebr., President of Nebraska State Medical Society; Dr. Channing Smith of Granger, Iowa, President-elect of the Iowa

State Medical Society; Dr. Vernon D. Blank of Des Moines, Iowa, Managing Director of the Iowa State Medical Society; Dr. Frederick Eugene Foley of St. Paul, Minn.; Dr. C. M. Anderson of Rochester, Minn.; Dr. J. A. Meyers of Minneapolis, Minn., Chairman of Board of Editors of JOURNAL-LANCET; Dr. G. G. Cottam, formerly a president of the Sioux Valley Medical Association and now residing at St. Paul, Minn.; Dr. P. B. McLaughlin of Sioux City, Iowa, and Dr. Wm. Jepson of Sioux City, Iowa.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. Frank J. Lawler, Minneapolis, is spending several months this winter at Washington, D. C.

Dr. A. Hoeper, Brooten, Minn., has moved to Litchfield, Minn., and opened offices for general practice.

Dr. G. F. Sjoden, Mora, Minn., has moved to Alexandria, and opened offices for general practice.

Dr. and Mrs. Robert Earl, St. Paul, are making a two months' trip in visiting the leading European cities.

Dr. J. T. Larson, Minneapolis, is now located at Iona, Minn., where he has opened offices for general practice.

Dr. C. M. Tank, Canton, S. D., has purchased the practice of the late Dr. B. T. Green, at Brookings, S. D.

Dr. L. W. Ruste, Madison, S. D., has moved to Dell Rapids, S. D., where he has purchased the practice of Dr. Forsette.

Mrs. Dr. M. Nordland, Minneapolis, was recently elected president of the Hennepin County Woman's Auxiliary Society.

Dr. B. S. Adams, Hibbing, Minn., is in New York City where he will spend several months in taking a postgraduating course.

Dr. G. A. Landmann, Scotland, S. D., is spending the winter in New Orleans, where he is taking a postgraduate course at the Tulane University.

Dr. Grove Baldwin, Sioux Falls, S. D., has been taking a special course of postgraduate work at Chicago, in Electro-Coagulation Tonsillectomy.

Dr. G. A. Carpenter, Fargo, recently celebrated his 68th birthday. Dr. Carpenter is well known as one of the leading practitioners of North Dakota.

Dr. J. D. Carr, superintendent of the North Dakota State Hospital for the insane, has been

elected president of the State Conference of Social Workers.

Dr. N. O. Pearce, Minneapolis, was reelected president of the Hennepin County Tuberculosis Association at the annual meeting recently held in that city.

Coöperation between the medical and public health organizations has resulted in a 50 per cent reduction in Minnesota tuberculosis cases in the last 20 years.

Dr. Otto Fiedler, Sheboygan, Wis., was elected president of the Northwestern Regional Conference of Physicians at the annual meeting recently held at St. Paul.

Dr. John H. Morse, Minneapolis, will be one of the party who will accompany Commander MacMillan on his thirteenth trip into the far North, next summer.

Plans call for a two-story building of hollow tile and brick. It is to provide room for 100 beds for tubercular Indians from several tribes in South and North Dakota.

Drs. S. E. Sweitzer and H. E. Michelson, Minneapolis, have been elected corresponding members of the Vienna Dermatological Society. With Dr. McKee, of New York City, they are the only three members of this society in the United States.

Several Minneapolis and St. Paul physicians were in Washington last month attending a White House Conference on Child Health. They were invited to attend the meeting by President Hoover.

Dr. Arthur A. Husser, a widely known surgeon of Havre, Mont., died recently from a severe case of pneumonia. Dr. Husser was well known in both Minnesota and North Dakota where he had formerly practiced.

Charlotte A. Stickney, M.D., a graduate of Smith College in 1919 and of the College of Physicians and Surgeons, Columbia University, New York, in 1928, announces the opening of offices for general practice at St. Cloud, Minn.

The Interior department has announced that it plans to go ahead as rapidly as possible with the construction of the Sioux Indian sanatorium at Pierre, S. D., for which \$375,000 was provided in the Interior department appropriation bill recently enacted.

The Sioux Falls District Medical Society held their February meeting at Sioux Falls and were addressed by Dr. Ernest M. Hammes of the University of Minnesota, his subject being "The

differential diagnosis of functional and organic nervous diseases."

At a meeting of the Whetstone Valley Medical association held at Milbank, S. D., last month, the following officers were elected: Dr. F. N. Cliff, Milbank, president; Dr. T. Hedemark, Revillo, vice president; Dr. D. A. Gregory, Milbank, secretary-treasurer.

Citing the "alarming growth" in the number of mental cases in the state, which he said are increasing four times as fast as Minnesota's population, Dr. Richard O. Beard of the University of Minnesota medical school advocates immediate establishment of a state Psychopathic Hospital on the university campus.

New officers of the Clay-Becker County, Minn., Medical Society are: President, Dr. B. T. Bottolfson, Moorhead; vice president, Dr. J. E. Carman, Detroit Lakes; secretary-treasurer, Dr. J. H. Heimark, Moorhead; delegate, Dr. M. C. Bergheim, Hawley; alternate, Dr. O. O. Larsen, Detroit Lakes; censor, Dr. L. H. Rutledge, Detroit Lakes.

Physicians of both Dakotas are cautioned to be on the lookout for certain canvassers who are soliciting business for a Professional Protective Insurance Company, who claim Kansas City, Mo., as their home office. An investigation was made and no such company is or has been doing business in that city and any such policies that are written are a fraud and worthless.

The Washington County Medical Society met at the Stillwater Club Rooms for the regular meeting last month, with a majority of the members present. Dr. J. B. Carey of the Nicollet Clinic, Minneapolis, was the guest speaker. His subject was "Gastrointestinal Lesions," the etiology, diagnosis and treatment, illustrated by numerous and very fine x-ray films.

The annual meeting of the twelfth district of the South Dakota Medical Society was held at Milbank last month. The meeting was preceded by a dinner at 6:30. Talks were given by Dr. J. L. Calene of Aberdeen, Dr. W. H. Karlins of Webster and Dr. D. A. Gregory of Milbank on topics pertaining to the profession. The twelfth district is composed of Day, Grant, and Roberts counties.

Dr. Charles B. Witherle, who was editor of the JOURNAL-LANCET, then NORTHWESTERN LANCET, in 1884-5, died at Portland, Maine, on February 3. He came to St. Paul in 1882 and

practiced medicine there for some fifteen years. At one time he was associated in practice with Dr. William Davis, and at another with the late Dr. R. J. Stone, both of whom in times past have been editors of this journal. For several years Dr. Witherle served as secretary of the Minnesota State Medical Association. He was born in Castine, Maine, and was seventy-six years old at the time of his death.

Dr. William J. Mayo, head of the Mayo clinic at Rochester, Minn., suggests a shorter route to medical education in colleges and universities. Dr. Mayo advocates a four-quarter system, which, he said would have two or more years in the training of the medical student and would put him into practice before he reached the age of 30. "The long period of from two to four years in the university before the student begins his medical course dulls his mind," he declared. "Why should these young people at the strongest period of life continue in the educational system of the grammar school?"

A meeting of the Sixth District Medical Society was held at Bismarck, Tuesday evening, Feb. 10, 1931. Dinner was served at seven o'clock, after which Dr. G. M. Constans of Bismarck, gave a paper on "The Diagnosis and Treatment of Common Infections of the Eye, Ear, Nose, Throat and Face," illustrated with lantern slides. Dr. W. H. Bodenstab, of Bismarck, discussed the paper. Dr. J. A. Evert of Glendive, Montana, read a paper on "Hyperthyroidism." This was discussed by Dr. H. A. Brandes of Bismarck. There were thirty-five members present and six guests.

The midwinter meeting of the Minnesota Radiological Society was held February 14, 1931, at the Minnesota Club, St. Paul. The following program was presented: "Round Table Discussion of Cases of Diseases of the Bones and of the Thorax," conducted by Dr. R. G. Allison, Minneapolis; "Round Table Discussion of Cases of Diseases of the Gall Bladder and of the Gastrointestinal Tract," conducted by Dr. John D. Camp, Rochester; "Roentgenologic Changes Seen in Cases of Boeck's Sarcoid and Related Lesions," Dr. S. A. Morton, Rochester; "A Correlation of the Various Factors Involved in the Classification of Chronic Arthritis," Dr. M. J. Shapiro, Minneapolis; "Pulmonary Metastases," Dr. Eugene T. Leddy, Rochester; "The Medical Histories of Cases of Carcinoma of the Stomach," Dr. Jacob Sagel, Minneapolis.

Botulism poisoning from pea salad served at a party at the farm home of Edward Hein, Graf-

ton, N. D., January 29, is believed to be the cause of thirteen deaths. The toxic material affected all the victims in practically the same manner and with one exception all were conscious until death and suffered no extreme pain. All complained of dizziness and impaired vision as the first symptoms, followed by failing sight and congested lungs. The midnight lunch consisted of "buns and wieners, olives, apples, two kinds of cake, and a pea salad, which included home canned peas, sliced cheese and some mayonnaise dressing placed on a lettuce leaf." Five of the eight members of the Hein family were among the victims. The three surviving children ate none of the salad; one of the other four survivors ate a small amount, apparently with no ill effect, and the other three ate generous portions but became sick a short time afterward and vomited.

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RESULTS OBTAINED BY IRRADIATION OF CARCINOMA OF THE CERVIX UTERI*

BY HARRY H. BOWING, M.D., and
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Of late years vigorous warfare has been waged against all forms of carcinoma. In this country and in foreign countries cancer commissions have been formed, large quantities of radium have been purchased, vigorous campaigns have been financed, and the public has been warned and instructed, by the Bureau of Health and Public Information of the American Medical Association, by government agencies, and by large life insurance companies.

The reasons for this aggressive activity are easily found. In this country, our chief lay scouting service against the ravages of carcinoma is the American Society for the Control of Cancer. Statistics published by this Society demonstrate that carcinoma now ranks second only to heart disease as a cause of death. In the year 1900, carcinoma rated sixth, with a mortality of 63 in each 100,000 inhabitants, and in 1927 it reached second place, with a rate of 96 in each 100,000. This increase is probably both real and apparent, considering as apparent factors, better diagnosis and the fact that, due to advances in medical science, more of us live to attain the "cancer age."

The American Society for the Control of Cancer has found that more women than men die of carcinoma. In 1920, the rate for each 100,000 inhabitants stood 103.2 for women against 79.2 for men. Furthermore, among 58,064 deaths from carcinoma among women in 1927, carcinoma of the female genital organs held second place. In 1927, 15,001 (25.83 per cent) women died of carcinoma of the genital organs. The Metropolitan Life Insurance Company reports carcinoma of the female genital organs as holding first place with a mortality of 30 per cent for the years 1923 to 1927. Carcinoma of the genital organs is mainly composed of carcinoma of the cervix and carcinoma of the fundus. Carcinoma of the cervix is seven or eight times as common as carcinoma of the fundus.

As radiologists, but primarily as physicians, we are interested in carcinoma of the cervix because of its large and increasing incidence, and especially because we are able to help and apparently to cure many of the patients.

The purpose of this paper is to ask help and coöperation among our readers, and to show what can be accomplished in this resistant disease by early diagnosis and careful treatment.

*Read before the South Dakota State Medical Association, Sioux Falls, South Dakota, May 20 to 22, 1930.

The general staff in the campaign against carcinoma comprises the general practitioner, the pathologist, the radiologist and the surgeon. Among these the general practitioner dominates the situation. To him the patient presents herself for annual general examination, or with complaint of unusual vaginal discharge or abnormal bleeding. It is the responsibility of the family physician, if his careful examination does not absolutely exclude malignancy, to refer the patient at once back to the base hospital, where she will find the radiologist, surgeon and pathologist co-operating in her fight for life. As every specialist in the treatment of carcinoma knows, time is the largest single factor in the outcome. The public has been educated, as has been mentioned, so that early signs and symptoms are more generally known and the public tends to come for help at an earlier stage in the disease.

The essential factor in diagnosis is for the practitioner always to bear the possibility of carcinoma in mind, that a bloody vaginal discharge should be considered to be due to carcinoma until proved otherwise, and to remember that carcinoma of the cervix is the most common pelvic carcinoma among women. It occurs far more commonly among women who have borne children; ancient lacerations of the cervix are a supposed etiologic factor. In a series of 997 patients treated at The Mayo Clinic, 885 (88.76 per cent) had borne children. Carcinoma should be suspected at the age of thirty-five years or older, although occasionally it occurs in the twenties. It is also a fact that in early cases there may not be detectable symptoms and the true diagnosis is revealed only on examination.

The earliest signs of carcinoma mentioned by the patient are unusual watery vaginal discharge, frequently of a foul odor, and spotting of blood after intercourse or on slight exertion. Signs and symptoms of more advanced carcinoma are vaginal hemorrhages, and pelvic pain frequently radiating to the hip and down the leg.

The diagnosis cannot always be made even by careful palpation of the involved area. However, a thorough pelvic examination is essential. If inspection of the cervix can also be carried out, with speculum and light, the picture is usually characteristic. Simulating conditions are cervical erosions, polyps or syphilitic or tuberculous infiltrations. Any doubt can be solved by clipping off a small bit of granulation and sending it to a laboratory for examination or by sending the patient to a surgeon to have the specimen removed and studied microscopically. In either event as soon as the diagnosis is made the operation or

treatment should be done immediately, since delay may prove serious in the ultimate outcome.

The value of time is emphasized in the attempt to save the patient. Once the general practitioner has established the diagnosis, in his campaign against cancer it is his responsibility to get the patient into the hands of the radiologist and the surgeon at the earliest possible moment. For every woman in an advanced stage of the disease, who can be cured for five years or longer, three or more have a possibility of a five year survival when carcinoma is in an early stage. Our greatest enemy is time. A few weeks may change an early curable lesion into a fulminating hopeless lesion.

The surgeon and the radiologist consult and coöperate in treatment. Large centralized institutions as well as qualified specialists with adequate amounts of radium and with Roentgen ray facilities are most competent to handle this type of case. Unfortunately, more than 90 per cent of patients referred to a radiologic clinic have an advanced stage of the disease, and are beyond hope of relief from surgical procedures, but even in this inoperable condition much may be accomplished by radiotherapy.

In order to ascertain precise effects of treatment we have classified the types of cases, the types of treatment, and the immediate and late results since the inception of treatment by radium for cervical carcinoma at The Mayo Clinic in 1915. These have recently been published^{1, 2, 3}. The classification of cases at the first examination is important, in the light of five year results. The lesions are classified (Table 1) into early or operable (growth limited to cervical canal or portion of face of cervix); borderline (lesion involving the entire face of the cervix frequently with extension onto the vaginal walls); inoperable (infiltration of one or both parametria, frequently with fixation and "frozen pelvis"); modified (the lesion modified by previous treatment elsewhere before the patient registered at the clinic; this treatment may have been cautery, partial surgical excision, or inadequate radium or Roentgen ray treatment), and recurring (growth returned following operation or irradiation in clinic). Logically, and as proved by final results, the prognosis is favorable in the early and borderline groups; in the inoperable, modified, and recurring groups the outlook is distinctly unfavorable from the standpoint of a five year survival rate. The 169 unclassified cases were omitted.³

In the small group of early lesions, operation or treatment by radium and Roentgen rays is optional. Equally good results are obtainable by

skillful surgical procedures or by careful irradiation; however, the mortality rate with the Wertheim operation is considerable, varying with the skill of the operator, and the mortality from irradiation is negligible. Less operating is done each year for this condition. Of course in most cases, those in the advanced inoperable group, radiotherapy is the only recourse.

The technic of irradiation at The Mayo Clinic has been reported.² In brief it consists of an intensive broken dose method; much of the treatment is carried out in a series of eight or more applications within three weeks, followed by high voltage Roentgen rays to four large pelvic portals. Only one course of radium is given unless there is demonstrable activity in the treatment field at a later date, then the Roentgen ray treatment is repeated after three months and in a few cases after six months. This constitutes the complete treatment and initiates another essential classification. At the first examination we study the patient and the lesion, and group the case according to what we can expect to accomplish. In other words, if the patient's general condition is good and the lesion is not too massive to preclude hope of a three year or a five year survival, we plan complete treatment. However, only limited treatment is outlined if the growth has metastasized widely and the patient's condition will not warrant subjecting her to the strain of much manipulation. If we attempt too much in the way of treatment, complications may ensue which will be so severe as to necessitate stopping all treatment. This group is then classified as "treatments abandoned," and naturally an endeavor is made to keep this class as small as possible. In another group of cases only a few vaginal applications of radium with Roentgen rays are given; this is classified as "prophylactic treatment group." Patients in this group are referred for such treatment following surgical excision of the cervix and uterus. Prognosis varies, of course, according to treatment category. Cases in which treatment was given in 1929 are analyzed in Table 2.

A distinction is made between the immediate and the late results. Immediate results are those obtained in the first few months following treatment. Improvement consists of repair of the tissues to a normal state so that a growth cannot be demonstrated visually or by palpation, the cessation of vaginal discharges and bleeding, the cessation or postponement of pain, and gain in general health of the patient. Late results are the presence or absence of the carcinoma five years after the treatment.

Immediate results as a rule are excellent. Discharge and bleeding are relieved, pain is diminished or allayed entirely, fistulas are prevented, and the local lesion heals. The results of radium treatment at The Mayo Clinic in 1929 are shown in Table 3.

Table 4 shows the late results in cases in which treatment was given at The Mayo Clinic from 1915 to 1924, inclusive. The number of cases traced was 1001 (91.5 per cent of the total studied). It illustrates the part played by time in the ultimate result: approximately 20 to 25 per cent of advanced cases salvaged for a five year period, in contrast to 60 to 75 per cent apparently cured in the very small number of cases of favorable early lesions.

The histologic picture is an interesting and essential feature, in regard to prognosis. Whenever feasible, biopsy is done at the outset of treatment, to permit further study. A microscopic examination was carried out in 625 of the 1094 cases in this series. Of these, 574 (91.84 per cent) were epitheliomas and forty-four (7.04 per cent) were adenocarcinomas. In seven (1.12 per cent) a mixture of the two was found. The cases were classified according to Broders' method of gradation with the following estimations: 476 lesions (76.16 per cent) were graded 3 and 4 and ninety-four lesions (15.04 per cent) were graded 1 and 2; fifty-five carcinomas (8.80 per cent) were not graded. From this study we see that the epithelial neoplasms predominate and the majority may be classified as a high grade carcinomatous process. The malignant cells rapidly invade the cervix and adjacent vaginal walls and parametrial tissue; however, widespread metastasis is happily uncommon in the early phases of the disease. As to prognosis: study of five year results in the 1001 traced cases indicated a slightly better survival rate, except in the modified group, for lesions graded 3 and 4 than for lesions graded 1 and 2.

SUMMARY

The widespread and increasing prevalence of carcinoma in all its forms has been emphasized. In carcinoma of the uterine cervix the advances in radiologic technic assure results undreamed of a few decades ago, results which will constantly improve with the institution of treatment at an earlier stage.

The general practitioner has been depicted as the key man in the situation. It is to him that the patient first presents herself for annual examination or with pelvic signs and symptoms. To the extent that the practitioner diagnoses the case in an early stage and despatches the patient with-

out delay to surgeons and radiologists specializing in the treatment of this disorder, will the toll of this dread disease decrease. The responsibility for the lives of these unfortunate patients rests primarily with the family physician.

Loss of time is the greatest enemy. Under present advanced methods of treatment, three lives will be saved for periods of five years and longer by inauguration of treatment when the carcinoma remains localized, compared with the saving of one life after the growth has extended to adjoining structures.

Patients must be studied and carefully traced. Too many believe themselves cured when the immediate beneficial effects of the treatment become manifest; it is only by the coöperation of the home physician and the radiologist and surgeon that these lives can be protracted and apparent cures accomplished.

With advancement of knowledge and by co-operation of the physicians at home with those at the treatment centers and other qualified specialists, the outlook in the future treatment of carcinoma, the most resistant of all diseases to treatment, is most hopeful.

TABLE 1
Classification of Cases

Classification	Cases	Per cent
Early	9	0.71
Borderline	14	1.11
Inoperable	603	47.82
Modified	468	37.11
Recurring .....	.....	.....
Unclassified	167	13.24
Total	1,261	99.99

TABLE 2
Classification According to Treatment Applied

Group	Cases	Per cent
Complete	142	72.45
Limited	43	21.94
Abandoned	5	2.55
Prophylactic	6	3.06
Total	196	100.00

TABLE 3
Immediate Results

Result	Cases	Per cent
Apparently cured	149	55.39
Improved	114	42.38
Unimproved	3	1.11
Died	3	1.11
Total	269	99.99

TABLE 4
Five-year Results in 1001 Traced Cases
Living After

Classification	Traced Five Years	Per cent
Early	8	75.00
Borderline	13	61.53
Inoperable	549	21.49
Modified	431	24.82
Total	1,001	23.87

DISCUSSION

PERCY D. PEABODY, M.D., Webster: I should like to ask the doctor just what dosage he is using in his treatment of these cases for his initial dosage. I should like to ask whether he is making a distinction in the size dose that he is using in the epithelioma type and in the adenocarcinoma type when diagnosis is made by biopsy.

M. A. STERN, M.D., Sioux Falls: I think this has been a very wonderful paper to listen to. The classification is especially good. I think that the things that are deduced from this classification are well worthy of very serious consideration.

As regards the diagnosis of carcinoma of the cervix, I think a complete history is perhaps the most important. There are two points in the history that will help everybody. I think that we can suspect 75 per cent of our cases of carcinoma of the cervix, and we may suspect this condition is present before we examine when we get two points in the history. Those two points are: First, a blood tinged watery discharge. It is not bloody, that is it is not frank blood, it is not a hemorrhage, but a blood tinged discharge.

The second is, if we elicit at time of history that the woman bleeds after intercourse or after straining at stool. If we elicit those two points we may have a very fair assumption that the woman has carcinoma of the cervix. If you are not sure after making your diagnosis, by all means do a biopsy.

As regards the treatment. We do just a little bit different than Dr. Bowing does at Rochester. We believe and have believed for ten years that carcinoma of the cervix should be treated by radium and not by any cutting operation. That is my personal opinion. Hysterectomy has no place in carcinoma of the cervix. I believe in radium plus cautery or electrocoagulation, if you wish, I don't know which is the better, but radium is just as effective alone. Whether one should combine electrocoagulation or the actual cautery with it, I don't know. But we do either one or the other, use radium or radium and the cautery.

I want to say that over this ten year period we have not had any such number of cases as this. We can't classify them in this way. We don't make any attempt to say whether they are early, moderately advanced or advanced. We treat them all alike. In the small number that we have, we have been able to get about 50 per cent of five year cures.

DR. BOWING (closing): The dose as applied does vary in the total. For example, the complete treatment ranges between 5,000 and 6,000 milligram hours, and the one application usually varies from ten hours to fourteen hours. It may go beyond those limits, or it may be even less. The average applicator is usually the 50 milligram tube of radium. The filtration is usually the silver wall of the applicator which is .5 millimeters and an extra millimeter of brass.

In the vaginal applications we have the filtration just mentioned, plus 2 millimeters of lead and a centimeter of rubber. In other words, well filtered radiation is applied, using gamma radiation, omitting the beta radiation which is usually notorious for bringing about radionecrosis.

As for the differentiation between epitheliomas and adenocarcinomas, there again the range is too great. For example, 90 per cent are epitheliomas, leaving 10 per cent adenocarcinomas. So you see your experience is with the 90 per cent. It is tedious, then, to say much about the 10 per cent. However, I do not know that there are any methods of inspection that will make the

diagnosis as to whether the condition is epithelioma or adenocarcinoma. Sometimes the location may help you. Epitheliomas usually invade the surface of the cervix, while the adenocarcinomas usually are within the cervical tissues. At times it is difficult to know whether you are dealing with adenocarcinoma of the fundus or adenocarcinoma of the cervix. So in that group, I am not clear in my mind as to whether or not it can be stated when the case is first seen that you are dealing with epithelioma or adenocarcinoma. Therefore, in treating adenocarcinomas you are always certain that you will treat the uterine cavity more liberally or more generously than you do the epithelioma, in the hope that it may have come from within rather than from the surface of the cervix. Those are thoughts that go into the treatment of the adenocarcinoma group, which, as I said, at times does not enter into the treatment of the epitheliomas.

I can only reemphasize in my feeble way the importance of a careful history which is usually characteristic. Inspection of the involved area with the patient in the knee chest position gives you a wonderful chance to visualize the part without traumatizing the area. The bleeding can usually be well controlled. The part can

be sponged, and you can readily compare the differences in color and texture of the mucosa. If care is taken and the part is well visualized, I am certain when the average patient comes to you, there will be no question in your mind as to what the lesion is, and instead of putting the patient on ordinary periods of observation and douching and probably cleaning up the part, you will be able to tell the patient immediately that she probably has a serious condition and she should seek immediate attention.

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OBSERVATIONS ON THE PATHOLOGY AND DIAGNOSIS
OF CHRONIC MAXILLARY SINUS DISEASE*

G. A. LARSON, M. D.

FARGO, NORTH DAKOTA

Because of its anatomic position, the maxillary sinus is inaccessible to examination by direct or endoscopic methods for clinical study. It is either by open operation or necropsy that we have been able to gain a true picture of the various diseases of the antrum of Highmore. It is easy to see, under such conditions, how errors in diagnosis and subsequent misdirected treatment can occur.

Histologically, the nasal mucosa presents a high columnar ciliated type rich in mucous and serous glands and erectile tissue. The lining of the maxillary sinus differs, in that the glands are fewer, there is no erectile tissue, and the sub-epithelial structure consists of a very loose connective tissue capable of tremendous swelling. This connective tissue lies on a firm bony base, except for a small membranous area about the ostium known as the nasal fontanelle. This forms the anatomic basis for catarrhal inflammation of the maxillary sinus, first described by Zuckerkandl, later by Hajeck, and finally elaborated upon by Hirsch.

Antrum puncture and lavage easily detect suppuration even in the early stages. Cytologic examination of the centrifuged washings, has been considered to be of value by some authors where the microscopic appearance was negative. The catarrhal inflammations are not so easily diagnosed, for the washings are usually negative, and consequently have been often overlooked in spite of the work of Zuckerkandl. It is to this type of antrum disease I wish to devote the greater portion of this paper.

Hirsch was the first to supply a satisfactory clinical description of this condition. He asserted that choanal polypi are an incarcerated prolapse of the mucosa of the maxillary sinus. From this he deduced that nasal polypi and the larger nasopharyngeal polypi arise from the antrum. To corroborate this he operated on the antrum in a case of recurring nasal polypi in spite of a negative puncture. The whole antrum was filled with a transparent edematous mucosa hanging from the walls in polypoid folds. He removed the edematous mucous membrane, and found on examination that it had the same histological

*Read at the midyear meeting of the North Dakota Academy of Ophthalmology and Otolaryngology, January, 1930.

appearance as polypi. There were disclosed three new facts:

1. An edema of high degree without suppuration.

2. Similarity in the histology of the edematous mucosa to nasal polypi.

3. Comparison between the mucosa of the antrum in cases of choanal polypi and relapsing nasal polypi presented two forms of catarrhal inflammation (a) a form capable of involution, (b) a form incapable of involution.

He opened the antrum in fifteen other cases of recurring nasal polypi, and found in all a high degree of catarrhal inflammation. In all these cases the antrum washings were negative. Summarizing his observations, he reported the following findings:

1. The chronic form of catarrhal antral inflammation was present in all cases of recurring polypi.

2. The chronic antral inflammation appeared in two forms: (a) The most frequent where there were edematous folds filling the cavity. (b) The other form, where the edematous mucosa had been drawn from the antral wall through the ostium in the form of a cord. On this cord were polypi in the middle meatus. Such cords have their origin from that part of the mucosa which prolapses through the ostium. This occurs during the acute stage or an acute exacerbation of a chronic inflammation.

3. After removal of the catarrhal antral mucosa, there were no recurrences of polypi.

The above findings have been repeatedly observed in my own cases. I have also found mixed forms in which there were isolated abscesses in the mucosa, and larger areas of cystic degeneration containing pus. This finding may be present in varying amounts superimposed on antral polyposis. Again, granulations and pus may predominate. It can be readily understood then, that a negative puncture has very little importance in chronic maxillary sinus disease.

Reference is made to dental infections, dental cysts and granulomata, tumors and osteomyelitis, only to emphasize their importance in relation to sinus disease, but a comprehensive review of this phase of the subject will not be included in this paper.

Vasomotor rhinitis, hay fever, and asthma have been suggested by Hirsch to bear a close relationship to catarrhal sinus disease. Further, attention has been called to the similarity between chronic catarrhal inflammation of the antrum and chronic catarrhal deafness. This is

particularly applicable in chronic adhesive processes where cord formations occur, much the same as in the maxillary sinus.

Differences between the suppurative and catarrhal forms are more easily distinguished clinically than microscopically. The characteristic edema of the tissue largely disappears during fixing and preparation. Also transitional stages between catarrhal and suppurative inflammation may be encountered. Histologically, catarrhal antral inflammation shows lymphocytic infiltration of the subepithelial layer, and very advanced edema.

Chronic suppurative antrum disease occurs usually in three forms:

1. Edematous.
2. Granular or infiltrated.
3. Fibrous.

The first form is an edema of the connective tissue. The second form, the granular or infiltrated, has a papillary surface, shows leucocytic infiltration and plasma cells. These cells are a constant finding and are thought to be degenerated lymphocytes. The third form may be smooth or papillary and differs in that it is very tough and fibrous.

Among the symptoms of chronic maxillary sinusitis, the following are outstanding:

1. Fatigue and weakness.
2. Headaches, ocular, maxillary, frontal or dental.
3. Chronic nasal discharge, anterior or posterior. Ear complications and pharyngitis lateralis.
4. Gastrointestinal disturbances.
5. Disturbances of taste, smell, and vision.
6. Recurrent attacks of laryngitis, bronchitis or bronchial asthma.
7. Apathy, malaise and mental dullness.
8. Loss of weight and impaired general health.

The Roentgen ray is of the greatest value in diagnosis. Recent work by Anderson, MacCready, and Goodyear on the filling of the sinuses with iodized oil, has made it possible to outline the inner surfaces of the lining mucous membrane. Swelling, growths, and polypi can be readily diagnosed by this method. (X-ray demonstration followed.)

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POLIOMYELITIS. AN EVALUATION OF SERUM THERAPY*

By E. S. PLATOU, M.D., AND C. A. STEWART, M. D.

MINNEAPOLIS, MINNESOTA

The earlier described epidemics of poliomyelitis which occurred first in Europe and later (1907-1916) in the United States, stimulated a great deal of important research. The names of Flexner¹, Noguchi², Levaditi³, Landsteiner⁴, Leiner⁵, and others are closely linked with some of the generally accepted conceptions of the disease, particularly in relation to its etiology and pathology. A filterable virus was described as its cause. The clinical disease was reproduced in monkeys through the use of the virus and transmitted again to other monkeys. The convalescent serum of these animals was found capable of neutralizing the active virus in vitro. In the ensuing few years convalescent serum was used as a therapeutic agent by Amoss⁶, Netter⁷, Chesney⁸ and others. After the war Zingher⁹ tried normal adult blood serum in a few cases and commented on its relative effectiveness. The more recent epidemics (1924-1929) in England, Germany, Roumania, New Zealand, and the United States have caused a reawakening of interest in poliomyelitis, and the reporting of four hundred and forty-one cases with thirty-four deaths in our own State during 1929, has emphasized the importance of utilizing the most worthy therapeutic measures available.

In evaluating clinical treatment in any infectious disease it is well, we believe, to discard any preconceptions based on experimental evidence, even though these may be well founded. Moreover, a clear picture of the modifying factors of relative individual immunity will result in worth while a priori skepticism. The following are more or less accepted facts in regard to poliomyelitis:

1. In contrast with other communicable diseases, recognizable poliomyelitis seems relatively infrequent even during epidemics.

2. Active immunity is established by an attack of poliomyelitis.

3. The age distribution of the incidence of recognizable forms of the disease corresponds closely to that of measles and diphtheria.

4. A very small percentage of children exposed to the disease in families and institutions contract it in the paralytic form (2 per cent in N. Y. in 1916).

5. Among young children there are more cases in urban than in rural centers, thus case incidence is directly proportioned to concentration of population.

6. Age distribution of paralytic forms then, is probably dependent upon immunity, which is subclinical.

7. The serum of convalescents contains virucidal properties.

8. The serum of adults having no history of poliomyelitis is capable of neutralizing the virus in vitro (experimentally) in most cases.

9. Serum of normal monkeys (theoretically never exposed) is inactive against the virus.

10. The virus can be demonstrated in the nasopharynx, lymph glands, and the nervous system of humans and monkeys suffering from the disease.

11. The normal nasopharyngeal mucosa of monkeys will prevent the transfer of virus to the brain and spinal cord, whereas, an abnormal mucosa (resulting from trauma or inflammatory conditions) will readily permit the passage of the virus to these areas.

12. Widespread (relative) immunity is probably due, therefore, to subinfective doses of virus, or to abortive forms of the disease resulting from "person to person" infestation where normal resistance of the nasopharynx obtains.

From theoretical and also from experimental and clinical evidence, the successful serum treatment of poliomyelitis is dependent upon early diagnosis, which can come only from an accurate conception of its pathology and symptomatology. It is now regarded as a probable systemic disease in which the neurotropic virus follows the olfactory nerves and causes a disturbance of the choroid mechanism. The virus then attacks primarily the nerve cells along the cord, causing neuronolysis and cell degeneration, although interstitial inflammatory changes and meningeal irritation occur more or less concomitantly.¹⁰

The symptoms during this preparalytic period consist of fever, nasopharyngeal inflammation, headache, gastrointestinal disturbance, and drowsiness. Tachycardia and prostration are often out of proportion to the temperature. Coarse tremors, slight neck rigidity, stiffness of

*Read before the Minneapolis Clinical Club and the Stearns County Medical Society, December 16, 1930.

the spine on bending forward in the sitting position, slightly positive Kernig and Brudzinski signs, and hyperactive deep reflexes complete the clinical picture. The spinal fluid will usually show an increase in pressure, thirty to eight hundred leukocytes, an increase in globulin, and normal sugar values. Paralysis may follow these symptoms in forty-eight to seventy-two hours.

Since the virus attacks nerve cells primarily, it is obvious that any form of treatment to be most effective should antedate the fixation of this virus in the spinal marrow. If paralysis has already set in, however, a treatment which will probably do no harm and which might prevent further cell destruction seems warranted. Drugs having been discarded in the treatment of poliomyelitis, we have to consider spinal drainage and serum therapy, the latter to include particularly convalescent human serum, antipoliomyelitis immune sheep or horse serum (Pettit),¹¹ anti-streptococcus horse serum of Rosenow,¹² and normal human serum.

SPINAL DRAINAGE

After reading the gratifying reports of various groups of workers using different methods of treatment, one of the authors (E. S. P.) is reminded of the clinical impression gained in 1923, when he had occasion to treat sixty-five cases of poliomyelitis under the supervision of a staff man who favored the procedure of repeated spinal puncture. The case fatality and percentage of appreciable lasting paralysis was certainly minimal, but with such a small series in but one year, without a control series for comparison, no accurate conclusions could be drawn. One finds reports in the literature of results obtained by this method, however, which compare favorably with controls and series treated with serums of various kinds. Whereas, spinal puncture cannot be regarded as a perfectly harmless procedure, nevertheless, its dangers may have been overestimated by some. Experimentally, lumbar puncture will not promote infection in monkeys following intravenous introduction of the virus, providing, however, that no hemorrhage takes place during the puncture. Any hemorrhage during spinal puncture will predispose to invasion of the nervous system.

* Five degrees of severity of paralysis are distinguished: 1. Good. Muscle is able to perform its function against gravity and some outside resistance. 2. Fair. Muscle is able to perform movement against gravity, but not able to overcome resistance to the movement. 3. Poor. Muscle is able to perform all or part of normal arc of movement, but unable to perform it against gravity. 4. Trace. No movement is possible, but tendon can be felt to tighten on attempt to contract. 5. Gone. No response on attempt to move can be felt in the muscle or tendon. Since there are approximately 106 muscle groups, a perfect score should be 530. W. L. Aycock and E. H. Luther: Preparalytic Poliomyelitis. J. A. M. A. 91:389.

ANTIPOLIOMYELITIS IMMUNE SERUM FROM SHEEP AND HORSES (PETTIT)

This serum, resulting in 1918 from what Pettit believed to be the successful immunization of a sheep and a horse, was tried rather extensively in France, being championed especially by Etienne.¹⁴ The 1927 Congress of French Pediatricians, however, did not share in the enthusiasm previously expressed by some observers for this preparation.

ANTISTREPTOCOCCUS HORSE SERUM (ROSENOW)

Using the Pleomorphic streptococcus, Rosenow prepared in horses a serum which he believed curative against the virus of poliomyelitis. He has reported over one thousand cases with excellent results. Flexner,¹⁵ Amoss,¹⁶ Eberson,¹⁷ Stewart,¹⁸ Hazelbauer,¹⁹ and other authorities have taken issue with him, contending that his pleomorphic streptococcus is not the cause of poliomyelitis; that his serum is not virucidal either in vitro or in vivo; and that a mixture of the serum and virus introduced intracerebrally will not protect a monkey against poliomyelitis. They are of the opinion that Rosenow's serum can have absolutely no merit, in spite of the fact that exceedingly favorable reports have appeared in the medical literature.

CONVALESCENT SERUM

Since the neutralizing power of convalescent serum against poliomyelitis virus is well established experimentally, it seems that its use should be very logical. The first reports of Netter and others who used it were promising but not striking. Ulrich,²⁰ Peabody,²¹ Watkins²² and others were not impressed with its effectiveness. In some of these cases individual specimens of convalescent serum were used. The more recent reports in which pooled serum has been given have been more convincing. Some of these studies, notably those by Aycock,²³ Luther,²⁴ and Kramer²⁵ from the Harvard Infantile Paralysis Commission, have been very carefully controlled. These men have attempted to include only cases with an accurate diagnosis of preparalytic poliomyelitis. They have tried to avoid the normal variability in case fatality rate due to differences in virulence at given times during the same epidemic. They have gauged their results on (1) case fatality; (2) percentage of cases developing no paralysis; (3) percentage developing grade four and five paralysis according to the Commission's scale;* (4) average paralysis compared to controls.

In Massachusetts, in 1927, one hundred and six cases were treated with a mortality of one

per cent, as compared to a general mortality of fourteen per cent. The percentage of cases developing no paralysis was much greater in the treated cases, and the average grade of paralysis was a great deal higher in the untreated cases (function only nineteen as compared to 63.6). Further observations on several hundred cases in 1928 and 1929 have likewise been favorable. Their technique consisted in the administration of from ten to twenty c.c. of convalescent serum intraspinally, and twenty to forty c.c. intravenously in the 1929 series. They found the smaller amounts of serum to be as effective as the larger dosages. Shaw²⁶ and Thelander²⁷ report favorably on preparalytic cases in which fifty to one hundred c.c. of serum were given at one dose intramuscularly.

From our own experience, convalescent serum has given very gratifying results in 1929 and 1930, although circumstances have not permitted of a control series to be studied. In our cases the size of the dose has seemed less important than the time of administration, those receiving it early seeming to develop little or no paralysis. Repetition of the dose has likewise failed to alter the outcome.

Flexner²⁸ and Stewart²⁹ have advocated the use of ten to twenty c.c. of convalescent serum prophylactically in the event of epidemics, repeating the dose every four to six weeks. Davide³⁰ used five c.c. of convalescent serum intramuscularly in seventy-three people under twenty-five years of age, and had eighty-four persons as controls. Of the controls fourteen developed definite poliomyelitis and several additional cases presented symptoms of abortive poliomyelitis, whereas, in the inoculated group, only one developed the disease and this one within forty hours, indicating that in this instance the disease was already present.

NORMAL HUMAN SERUM

The results obtained with normal human serum by Zingher in a few cases in 1916 attracted little attention until recently. Aycock³¹ and Kramer³² reported this year that the serum of eighteen out of twenty-one adults with no history of poliomyelitis was capable of neutralizing the poliomyelitis virus *in vitro*.

Shaughnessy,³³ Harmon,³⁴ and Gordon³⁵ made the striking observation that in the dilutions of one to thirty (a dilution corresponding somewhat to that occurring after the administration

of the maximum dose as used in man) the serum of family "contacts" and older children possesses greater power to neutralize poliomyelitis virus than convalescent serum does (experimentally). This observation has stimulated us to collect at the Minneapolis General Hospital serum from adult "contacts," so that we may compare its efficiency in the future with that of convalescent serum. Ideally these specimens should be shown to neutralize virus *in vitro* before they are used.

1. The comparative effectiveness of the intramuscular administration of adult blood serum (preferably pooled "contact" serum) and convalescent serum as prophylactic measures in instances of definite or possible exposure to poliomyelitis.

2. The comparative value of intravenously administered serums (convalescent, adult contact or normal adult serum) as therapeutic agents provided cross matching shows compatibility.

SUMMARY

1. Poliomyelitis undoubtedly is far more prevalent than is indicated by recognizable forms of the disease, having an age distribution of incidence corresponding somewhat to that of measles and diphtheria, and bearing a rather direct relationship to the density of population.

2. The serums of convalescents, adult contacts, and of the majority of "normal" adults have verucidal properties, indicating that immunity to the disease is rather general, particularly in adults, resulting from recognized and more frequently from unrecognized forms of infection by the poliomyelitis virus.

3. The possibilities of effective serum therapy point most favorably to the use of convalescent, adult contact, and "normal" adult blood serums. At present the convalescent serum seems to be the serum of choice in the early treatment of poliomyelitis, although there is some evidence that adult contact serum may be even more valuable. Should further study demonstrate adult contact and "normal" adult serums to equal or exceed convalescent serum in effectiveness, we shall immediately be provided with an immense reservoir of antipoliomyelitis serum for therapeutic use.

4. If convalescent serum is not available, the blood or serum of adults (preferably contacts) probably will serve as a valuable prophylactic

This is the third of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

BY LEO G. RIGLER, M. D.

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INFECTIOUS PROCESSES OF BONES

A. General Considerations

Examination of bones must determine:

1. Changes in form, size, density of the bone.
2. Abnormal presence of calcium in the periosteum—is there any periosteal new bone formation?
3. Changes in the cortex, or medulla.
4. Changes in the soft tissues—is there any disease of soft parts?
5. Multiplicity of the lesion.
6. Invasive character of the lesion—does it break into joints or affect neighboring bones?

B. Osteomyelitis

1. *Acute.* This gives no X-ray evidence for from seven to fourteen days, depending on the type of infection and the reaction of the patient. It is possible to see changes in the soft tissues earlier. With exceptionally good technique it may be possible to demonstrate vascular changes but in general a negative X-ray does not indicate the absence of osteomyelitis if the disease has been present for less than fourteen days. After this time the changes may be very rapid.

a. Findings.

- (1) First, destruction beginning in the medulla but quickly involving the cortex. This manifests itself as areas of decreased density in the bone, irregular, multiple, and extending up and down the shaft of the bone.
- (2) Later periosteal new bone formation, seen as a layer of calcium deposited parallel to the shaft of the bone. The edges of this layer tend to indicate the extreme limits of the infection.
- (3) The soft tissues show enlargement, swelling, increased density.
- (4) Although the lesions are multiple in the one bone, usually only one is involved although in certain types many bones show lesions.
- (5) The diseased area tends to stop at the epiphyseal line, not invading the epiphysis or the joint. Although the soft tissues are invaded, neighboring bones are usually not.

b. *Value of X-ray examination in acute osteomyelitis* lies in the determination of:

- (1) The place or origin, i. e., which bone and what part of it.
- (2) The character of the destruction, i. e., its rapidity.
- (3) The path of extension of the process.
- (4) The limitations of the process.
- (5) The character and location of the new bone formation and the periosteal reaction.
- (6) The appearance of sinuses in the bone.
- (7) The condition of the cortex, whether intact or destroyed.

2. *Chronic osteomyelitis.*

a. Findings. As an osteomyelitic infection becomes chronic, certain other findings appear.

- (1) There are changes in form, the bone becoming more irregular, somewhat wavy and tortuous.
- (2) The bone becomes thicker than normal.
- (3) There is a marked increase in density, especially in the medulla which tends to become obliterated, so that it cannot be distinguished sharply from the cortex. The cortex is greatly thickened and much denser than normal.
- (4) Periosteal new bone formation is present.
- (5) Pathological fractures may be present.
- (6) Sequestra may be shown. These appear usually as areas of greater density, almost chalky white in color, well separated, frequently, from the surrounding bone. Occasionally they are seen extruding through the cortex or lying free in the soft tissues or lying in the center of an area of markedly decreased density, a bone abscess.
- (7) Abscesses may be represented as round, rarefied areas, usually in the medulla or completely through the bone.

8. *Value of X-ray examination in chronic osteomyelitis* is similar to acute forms. In addition it is indispensable in determining the extent and location of sequestra and abscesses.

3. *Secondary osteomyelitis.* Frequently in the phalanges, infections of the bone occur due to invasion from a soft tissue lesion. This also occurs in association with gangrene and even with varicose ulcers. Invasion of bones from a purulent arthritis may also occur.

a. Chief differences from other types.

(1) In the phalanges the process is usually almost entirely destructive and tends to be progressive. It invades the inter-phalangeal joints and shows little or no periosteal new bone formation. It usually begins at the tip of the phalanx and progresses proximally.

(2) In association with gangrene and marked arteriosclerosis we may see first a marked decalcification of bone, then progressive bone destruction, associated with marked periosteal new bone formation. The process is more marked in the cortex than the medulla indicating its secondary character.

(3) With varicose ulcers a localized thickening of the cortex of the tibia and some periosteal new bone formation may appear.

b. *Value of X-ray examination in secondary osteomyelitis.* It indicates clearly the extent of the process and its progress. When amputation becomes necessary the roentgenogram gives the best indication as to where it should be done.

C. *Acquired Syphilis*

This is essentially a disease of the cortex and periosteum, chronic, slowly progressive, generalized, productive and sclerosing.

1. *Findings.*

a. There are marked changes in form, the bony outlines becoming curved, wavy, irregular.
b. There may be some increase in thickness.
c. There is a marked increase in density of the cortex.

d. Usually there is marked periosteal new bone formation. This may be laid down in laminae lying parallel to the shaft of the bone and superimposed upon each other or as an irregular deposit resembling "lace-work."

e. The medulla is essentially unaffected.
f. The cortex is greatly thickened and may show small areas of decreased density beneath it due to small gummata.
g. The soft tissues are unaffected.
h. The lesions are always multiple and very extensive in each of the bones involved.
i. The lesions are distinctly non-invasive.

j. A special type of lesion is present in the phalanges and metacarpals and metatarsals where both destruction of cortex and very irregular periosteal new bone may be found.

D. *Tuberculous Osteomyelitis*

As a disease of the shaft, this is very rare in adults, but occurs occasionally in children. It is essentially a destructive rather than productive process.

1. *Findings.*

a. There is very little change in form and size.
b. Decreased density due to marked atrophy is usually present.

c. In the adult no periosteal new bone formation occurs. In children this may appear especially in the phalanges where it tends to form fusiform shaped bones. This is difficult to distinguish from syphilis.

d. There is marked destruction both in cortex and medulla with areas of decreased density.

e. The soft tissues are involved and sinuses are frequent.

f. The lesions are usually single.

g. It tends to invade joints and soft tissue and passes into the epiphyseal ends of bones.

2. *The differential diagnosis.*

a. From non-tuberculous osteomyelitis it is distinguished by its lack of periosteal new bone, the lack of sclerosis, the invasion of the epiphyseal ends and of the joints, the very marked soft tissue changes, the extreme atrophy of bones.

b. From acquired syphilis by the destructive, non-productive, invasive character of the lesion and its lack of multiplicity.

E. *Miscellaneous*

1. *Actinomycosis and blastomycosis.* These present typical pictures of chronic osteomyelitis which are difficult to distinguish from it.

2. *Raynaud's disease.* This produces a marked atrophy of the terminal phalanges which tend to take on a sharp, spear-like appearance, or may disappear in part.

3. *Endarteritis Obliterans.* This may show changes similar to Raynaud's except that the spear-like character is not so marked.

4. *Pulmonary osteoarthropathy.* In this condition we may get a generalized periostitis, new bone being laid down parallel to the shaft, near the joints in a very uniform manner. It usually produces changes in the phalanges and metacarpals first, which helps to distinguish it from syphilis. The terminal phalanges become "tufted" or very much broadened at their extreme ends. Occasionally an area of necrosis appears in these phalanges. The joints themselves show only enlargement.

F. *Value of X-ray Examination in Bone Infections*

Considered as a whole, bone infections, suspected or present, of any kind, are a paramount indication for roentgen examination. By this means a correct diagnosis can frequently be established and a tremendous amount of valuable information as to the extent, progress, and nature of the disease process can be obtained.

BONE TUMORS

A. *General Consideration*

1. *Value of X-ray examination and information obtained.* In the diagnosis of bone tumors the X-ray examination is of great importance and may reveal:

- a. Whether or not a tumor arising from or connected with the bone is present.
- b. Whether the tumor is benign or malignant.
- c. The extent of the involvement.
- d. In most cases the actual type of tumor present according to its histological character.

The diagnosis should be made upon all the findings, i. e., age, sex, history, physical findings, etc., in addition to the X-ray findings. The latter should be classified and analyzed and the diagnosis arrived at by elimination. The roentgenogram is no doubt the most important single means of diagnosis except for the biopsy and at times may be even more accurate than the microscopic examination of tissue from the tumor.

2. *Points of value* in viewing film of a bone tumor and for classification.

- a. In viewing a film of a bone tumor we must determine:
 - (1) The origin of the growth, medullary, cortical, periosteal. This can frequently be done in the early stages and depends upon the location of the lesion or upon the part of the bone most affected.
 - (2) Whether or not there is production of new bone.
 - (3) Whether or not there is destruction of bone.
 - (4) Whether the tumor invades the soft tissues and neighboring parts, or extends up and down the shaft, and is sharply demarcated or otherwise.
 - (5) Whether it ruptures the cortex or expands it.
 - (6) The location, which bone, and what part of the bone.
 - (7) Single or multiple, both as to the number of bones involved and the number of lesions in one bone.
 - (8) Rapidity of growth, determined either by repeated examinations or by estimation of the character of the growth.

In describing bone tumors those of the above characters which are of importance in each case will be tabulated by the corresponding number.

B. *Benign Tumors*

1. *Exostoses.* Small projections from the cortex of the long bone, which may be pencil shaped, flat-topped, rounded.

- (1) Cortex. (2) Production. (4) Not invasive and sharply circumscribed. (5) No rupture. (6) Long bones near their ends. (7) Us-

ually multiple bones and lesions. (8) Slow growing.

2. *Multiple cartilaginous exostoses.* Similar to above except that they are always multiple and are near joints. The shadows are not seen early until they calcify.

3. *Osteoma.* Very similar to exostoses except that they are larger, tend to be pedunculated, and may appear cystic due to areas of cartilage within the tumor mass.

4. *Osteochondromatosis.* These are cartilaginous tumors lying within the joints, free from the bone, which resemble osteomata very closely after they become calcified.

5. *Osteochondromata.* This is a combination form of osteoma and chondroma which gives a picture similar to osteoma except that they tend to be larger and to show more of the large areas of rarefaction within the dense mass of bone.

6. *Enchondromata.* These are multiple cartilaginous deposits within the shafts of bones, usually the phalanges. They give the appearance of cystic areas, because the cartilage is of such low density that it resembles a defect in the bone. Pathological fractures are common.

(1) Either medullary or cortical. (2) No production. (3) Bone destruction. (4) Expands slightly, non-invasive, sharply circumscribed. (5) No rupture. (6) Usually phalanges. (7) Multiple bones and lesions. (8) Slow growing.

7. *Bone Cyst.* These have somewhat the appearance of enchondromata except that they are larger, are always medullary in origin and location, appear in the long bones, extend up and down the shaft, and may be single. Pathological fractures are common and often lead to their discovery.

8. *Benign giant cell tumor.* (Giant cell sarcoma.)

(1) Always medullary. (2) No production but show trabeculation within cystic area. (3) Bone destruction usually sharply circumscribed. (4) Extends up and down, sharply demarcated, rarely invades soft tissues. (5) Rarely ruptures cortex, but expands it. (6) Long bones, usually in ends. (7) Single. (8) Slow growing.

Pathological fractures are common. They may be occasionally malignant and thus become invasive.

9. *Ossifying hematoma.*

(1) Periosteal. (2) Production. (3) No destruction. (4) Sharply circumscribed and no invasion. (5) No rupture. (6) Any bone. (7) Single. (8) Slow growing.

C. *Malignant Tumors—Primary*

1. *Osteogenic sarcoma.* Four types.

a. Medullary, round cell, or telangiectatic type.

(1) Medullary. (2) No bone production. (3) Much bone destruction. (4) Invades soft tissues. (5) Ruptures and destroys cortex and not sharply circumscribed. (6) Usually long bones nearer ends, but may be any bone. (7) Single, both bone and lesion. (8) Very rapid growth.

The complete destruction of all bone in its path, the rapid development of the soft tissue tumor, the complete lack of bone regeneration even though the cortex is attacked, all are characteristic of this tumor. Pathological fractures are very common.

b. Periosteal type.

(1) Periosteal and cortical. (2) Bone production laid down perpendicularly to the shaft. (3) Moderate bone destruction. (4) Invades soft tissues and not sharply circumscribed. (5) Destroys cortex. (6) Long bones usually near ends. (7) Single. (8) Rapid growth.

The excessive, irregular and unlimited production of bone with fine, needle-like projections extending out perpendicularly to the shaft of the bone is the characteristic feature of this tumor. Pathological fractures occur.

c. Mixed type combines many of the features of the above two.

d. Sclerosing type. Similar to the periosteal except that there is little destruction and the new bone found tends to be very dense and to originate in the cortex.

2. *Myeloma*.

(1) Medullary. (2) No bone production. (3) Bone destruction in small rounded, punched out areas. (4) Invades soft tissues late, expands cortex early. (5) Ruptures cortex late. (6) Most common in sternum, ribs, skull but may be in any bone. (7) Always exceedingly multiple as to lesion and usually as to bone. (8) Slow growing.

Occasionally extreme cases of multiple myeloma may produce a diffuse osteoporosis of all the bones resembling osteitis fibrosa cystica and difficult to distinguish from it.

3. *Ewing's sarcoma or endothelial myeloma*.

a. A diffuse type which may be single, involving one bone, or involves multiple bones. This resembles the periosteal type of sarcoma and also osteomyelitis. The single type: (1) Medullary and peripheral. (2) Bone production both parallel to shaft (like osteomyelitis) and transverse to shaft with fine needles of bone (like sarcoma). (3) Some bone destruction. (4) Invades soft tissues, and not sharply demarcated. (5) Destroys cortex. (6) Most common in long bones and in middle of shaft (different from sarcoma). (7) Single. (8) Fairly rapid growth. Tends to lay down numerous layers of bone like an "onion skin" in appearance.

b. An angio-endothelial type, usually single

but may be multiple. This type:

(1) Medullary. (2) Little bone production. (3) Bone destruction which may have a sclerotic border. (4) Invades soft tissues and not sharply demarcated. (5) Destroys cortex. (6) May occur in any bone. (7) Single or multiple. (8) Rapid growth.

This resembles hypernephroma metastases when multiple. May show bone production in fine needles transverse to shaft which tends to distinguish it from metastases.

D. *Malignant Tumors—Metastatic*

1. *Carcinoma. Two types.*

a. Osteoclastic. Secondary to carcinoma of any organ, but rarely the prostate. Most common from the breast, pelvic organs, and thyroid. Pathological fractures are frequent.

(1) Medullary. (2) No production. (3) Marked bone destruction either in small irregular areas or large ragged-edged areas. (4) Does not expand. Invades soft tissues, but does not produce much soft tissue tumor. Not sharply demarcated. (5) Ruptures and destroys cortex. (6) Any bone, most common in ribs and long bones. (7) Always multiple lesions, usually multiple bones. (8) Rapidly growing.

b. Osteoblastic. Produces bone by irritation of tumor mass. May or may not be accompanied by osteoclastic type. Most common from carcinoma of prostate, but may also be secondary to carcinoma of breast and rarely of thyroid and other organs.

(1) Medullary. (2) Bone production within the confines of the bone, i. e., there is increased density but usually no bone produced along the periosteum or beyond the margins of the bone. (3) May have some destruction. (4) No invasion or expansion, nor sharply demarcated. (5) No rupture. (6) Usually lower lumbar spine and pelvis. May involve other bones later. (7) Always multiple, bones and lesions. (8) Slow growing.

2. *Hypernephroma*. Has much the same characteristics as osteoclastic carcinoma except that it is slower growing and may be more sharply demarcated. Tends to occur above the elbows and knees but not necessarily so.

E. *Hodgkin's Disease*

This may invade the bones either by direct extension or by distant metastasis. The appearance suggests most strongly carcinomatous metastases, usually osteoclastic but rarely osteoblastic. Occasionally the earliest findings are a diffuse rarefaction of the involved bones.

F. *Paget's Disease or Osteitis Deformans*

This may be inflammatory but is classified with tumors. It is characterized by a special kind of

bone production, increased trabeculation of bones, great thickening of their shafts, some destruction, bowing of the pelvis and femurs, increased size of the involved bones, flattening of skull, a general distribution. It resembles somewhat osteoblastic carcinoma.

G. *Osteitis Fibrosa Cystica*

Multiple bone cysts and in addition increased trabeculation with bone production and generalized distribution. Pathological fractures are common.

II. *Summary of Bone Tumor Findings*

1. *Origin.*

a. Medullary: Enchondromata, bone cysts, giant cell tumor, round cell osteogenic sarcoma, myeloma, carcinoma, hypernephroma, osteitis fibrosa cystica, Ewing's sarcoma of angio-endothelioma type.

b. Cortical and periosteal: Osteoma, enchondroma, ossifying hematoma, periosteal and sclerosing osteogenic sarcoma, osteitis fibrosa cystica, osteitis deformans, Ewing's sarcoma of diffuse type.

2. *Bone production.* Osteoma, ossifying hematoma, periosteal and sclerosing types of osteogenic sarcoma, Ewing's sarcoma of diffuse type, osteoblastic carcinoma. Giant cell tumor and bone cysts may show production after fracture or treatment.

3. *Bone destruction.* All malignant tumors and all benign tumors except osteoma, osteochondroma, exostosis.

4. *Character of growth.*

a. Cortex expanded with invasion up and down the shaft. Enchondroma, bone cyst, giant

cell tumor.

b. Invasion soft tissues and not sharply demarcated. All malignant tumors tend to invade and benign never do, except rarely giant cell tumor.

5. *Rupture cortex.* All malignant tumors and rarely giant cell tumor.

6. *Location.* Metastatic lesions to middle of bones, sarcoma nearer ends. Giant cell tumor at very end of bones. Hypernephroma above knees and elbows. Osteoblastic carcinoma to pelvis and spine. Ewing's sarcoma, diffuse type, in middle of shaft of long bones.

7. *Multiplicity.*

a. Always single. Giant cell tumor, osteogenic sarcoma.

b. Always multiple. Myeloma, osteitis fibrosa cystica, osteoblastic carcinoma.

The remainder may be either, most commonly multiple.

8. *Special Findings.*

a. Giant cell tumor. Trabeculations within cystic area of destruction.

b. Periosteal type of osteogenic sarcoma. Ray-like bone production.

c. Myeloma. Round, sharply defined, very multiple areas of destruction.

d. Ewing's sarcoma. Multiplicity of malignant primary tumors in bone. Resemblance to osteomyelitis of diffuse type.

I. *New Classification*

The new classification of bone tumors adopted by the American College of Surgeons can be correlated with the above roentgenological classifications as follows:

I. *New Classification.*

The new classification of bone tumors adopted by the American College of Surgeons can be correlated with the above roentgenological classifications as follows:

1. *New Classification*

a. Metastatic tumors primary in tissue other than bone.....	Metastatic carcinoma hypernephroma.
b. Periosteal or parosteal fibrosarcoma	No X-ray findings in the bones
c. Osteogenic tumors	
(1) Benign	Osteoma, osteochondroma, chondroma, enchondroma, exostoses
(2) Malignant (Periosteal)	Periosteal sarcoma
(Medullary and subperiosteal).....	Medullary sarcoma
(Sclerosing)	Sclerosing sarcoma
(Telangiectatic)	Telangiectatic sarcoma
d. Inflammatory conditions	Benign bone cyst, Paget's disease, osteitis fibrosa cystica, Hodgkin's.

2. *X-ray Classification.* Metastatic carcinoma hypernephroma. No X-ray findings in the bones.

Continued in next issue.

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1752.

The case is that of a white man, age 48, who was admitted to hospital October 16, 1930, at 9:25 A. M., with the following history. He had pneumonia and pleurisy in 1917 from which he apparently recovered but was found to have positive sputum in 1920. He was sent to the Walker Sanatorium and was a patient there for nine years; transferred to the present hospital as above noted. In 1920 he had slight cough and raised two or three ounces in twenty-four hours. He had bloody sputum, dyspnea, night sweats at the onset, poor strength, chills, and poor appetite.

Examination showed excursion more complete on the right, the right side being more filled out. There was dullness on both sides about half way down. At the base of the left lung there was almost complete dullness with increased vocal fremitus. There were râles over the entire right side, inferiorly and posteriorly. There were a few at the left apex. There was bronchial breathing throughout. The heart was normal. The blood pressure was 86/60. The abdomen was quite spastic and the examination was unsatisfactory. The liver was down three fingers. The spleen was not palpable. The patient was quite emaciated. The clinical diagnoses were tuberculous peritonitis and far advanced pulmonary tuberculosis.

The sputum was persistently positive for tuberculosis. The urine showed the specific gravity to range from 1.008 to 1.010. There was a faint trace to 3+ albumin. There was no sugar. There were occasional hyaline and granular casts, a few white blood cells and occasional red blood cells. There was occult blood in the stools. The blood count showed the hemoglobin to be 57 per cent, erythrocytes 3,000,000, leucocytes 19,000 with 87 per cent polymorphonuclear leucocytes. The Wassermann was negative. The urea nitrogen on November 6, 1930, was 29.6 mg. per 100 cc. A gastrointestinal X-ray examination showed a negative stomach and duodenum. An X-ray of the chest read as follows: There is a very extensive infiltration of the left lung due to advanced pulmonary tuberculosis, with multiple cavities present and with marked pleuritic thickening and adhesions, with retraction of the heart and mediastinum to the left. There is slight retrac-

tion of the lung due to pneumothorax. There is a fluid level in the left base which may be due to a large cavity or may possibly be pleural. There is considerable old infiltration in the right upper lobe.

The patient's temperature stayed around 99° with an occasional rise to 100°. He died November 19, 1930, at 9:25 P. M., after a progressive downhill course.

Post-mortem report. Marked emaciation; no edema; no jaundice; a small decubitus over the right trochanter. Subcutaneous fat practically absent. Both pleural cavities are largely obliterated by adhesions. The heart weighs 218 grams; pale, cloudy muscle. The right lung weighs 818 grams; a cavity in the apex 2 cm. in diameter; numerous caseous areas and nodules of tuberculous tissue throughout the upper lobe. The left lung weighs 617 grams; cavities throughout both lobes; the largest cavity is near the apex and measures 4 cm. in diameter; others 2 to 3 cm. in diameter; numerous nodules of tuberculous tissue throughout the lung.

The liver weighs 2848 grams and extends 5 cm. below the costal margin in the right midaxillary line; extensive amyloidosis. The spleen weighs 214 grams; amyloid corpuscles. Kidneys 138 grams and 122 grams; pale surfaces; extensive amyloid disease. Tuberculous lesions in the mucosa of the bladder, in the prostate, cecum, colon, and kidneys.

Diagnoses. 1. Chronic tuberculosis of the lungs with cavity formation. 2. Amyloidosis of the liver, kidneys, and spleen.

Comment. Amyloid disease is a frequent complication of chronic tuberculosis with cavities. Death is sometimes due to renal insufficiency. In this case moderate renal insufficiency is present.

Autopsy—30—1567.

The case is that of a boy, 16 years old, who was first admitted to hospital June 5, 1930, complaining of swelling of the feet, abdomen, and neck of two months' duration; scanty urine of dark color of two months' duration; cough of two months' duration; nausea and vomiting for one month; constipation for one month; and high blood pressure which had been determined six weeks previously. Most of the symptoms began about April 1, 1930, with edema of the neck, jaw, ankles, and

abdomen, followed by gastric distress with nausea and vomiting and great weakness. He was in another hospital from June 1 to June 5. There had been no previous illness or operations.

On his first admission, examination revealed marked edema of the face, feet, abdomen, and scrotum. Blood pressure was 180/114. Reflexes were sluggish. X-ray showed a left maxillary sinusitis, pleural effusion in the right base, and left ventricular hypertrophy of the heart. Basal metabolism in two tests was -19 per cent and -39 per cent. Repeated urinalyses showed albumin ++++, numerous hyaline casts, a few granular casts, 15 to 20 red cells, and 20 to 30 white cells. Concentration dilution test on August 13 showed the highest specific gravity to be 1017 and the lowest 1011. On admission there was 96 per cent hemoglobin, 4,700,000 red blood cells, and 15,900 white cells. On discharge there was 89 per cent hemoglobin, 4,500,000 red cells and 8,900 white cells. Urea was 30 mg., creatinin 2.8 mg., cholesterol 240 on admission. There was a slight decrease on discharge. Phenolsulphonephthalein showed 25 per cent and 23 per cent excretions on two tests. Eyegrounds showed increasing albuminuric retinitis, and there were evidences of increased blood pressure of some duration. The patient was somewhat improved and was discharged on September 9.

He was readmitted on October 16, with a story of progressive weakness, nausea and vomiting, slight edema, and chills and fever since his discharge. He had been asked to return to the hospital for observation. His face was pale. There was slightly increased resonance in the base of the chest and there were rales at the right base. There was a systolic murmur at the apex of the heart. Blood pressure was 178/110. The

liver could just be felt at the costal margin. There was no ascities.

Hemoglobin was 59 per cent, red blood cells 2,400,000, white cells 11,000. Urine showed albumin ++++, hyaline and granular casts, 90 to 100 red cells, and 8 to 10 white cells. Urea 67 mg.; creatinin 4.5 mg.; cholesterol 210, indican ++++ (.53 mg.), and xanthoproteic 51. On the twenty-third urea was 116 mg.; creatinin 5.8 mg.; van Slyke 22, indican .6, and xanthoproteic 83. Urine showed 115 to 125 red blood cells and 20 to 50 pus cells. The hemoglobin dropped to 45 per cent with 2,200,000 red cells. Leucocyte and differential counts were normal.

The patient was without ascites, and edema of the extremities disappeared. He had two or three convulsions, and he died 10 days after his second admission.

Post-mortem report. Slight edema of the face. 200 cc. of clear fluid in the peritoneal cavity. The heart weighs 320 grams; definite left ventricular hypertrophy. Bronchopneumonia in the lateral and anterior portions of the right lung. Cloudy swelling of the liver. The kidneys together weigh 285 grams; the surfaces are smooth and the capsules are non-adherent; yellowish color of the cortex. Microscopic examination shows advanced glomerulonephritis of subacute type, that is, all the glomeruli are severely involved but there is only moderate tubular atrophy.

Comment. This is a typical example of glomerulonephritis. On the basis of the duration and the microscopic picture it may be called subacute. These cases usually begin following a throat infection, but, as in this case, there is often no definite infection to which the onset may be attributed.

POLIOMYELITIS

(Continued from Page 203)

agent in doses of ten to twenty c.c. intramuscularly.

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This is the second of a series of four articles covering the field of Immunization by Dr. H. D. Lees, Assistant Professor of Preventive Medicine and Public Health, and Assistant Director of Student Health at the University of Minnesota. The concluding articles will appear in the fifteenth of the month issues until the series is completed.

SCARLET FEVER

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MINNEAPOLIS, MINNESOTA

Sydenham, in 1665, was the first to describe adequately scarlet fever as a distinct, specific disease. Although scarlet fever is endemic in most large cities of the temperate zone, areas of comparative immunity exist in the tropics. In some of our southern states the disease is not nearly so prevalent as in the northern states and Canada. Recent statistical studies of the morbidity and mortality rates of scarlet fever for the past half century, indicate that there has been a rather decided decrease in virulence of the disease during this period. The United States Census Bureau reports a scarlet fever mortality rate of 54.0 per 100,000 population in the registration area in 1880, and a rate of 3.0 per 100,000 population in 1918. Pope¹, in his report on the epidemiology of scarlet fever in Providence, covering the period from 1885 to 1924, shows that scarlet fever deaths decreased from 40.0 to 2.0 per 100,000 population. He found that the case fatality rate (deaths per one hundred cases of the disease) varied between 21.1 in 1887-88, the highest, and 0.86 in 1923-24, the lowest. Whereas scarlet fever was formerly responsible for 5.3 per cent of all deaths in Providence, it is now the cause of only 0.3 per cent of all deaths. Records of the State of Massachusetts show a similar improvement in mortality, as evidenced by a rate of 77 deaths per 100,000 population in the ten year period 1866-1875, and 13 deaths per 100,000 population in the eight year period 1896-1903. Pope believes that decreased malignancy is the factor largely responsible for this steadily decreasing death rate.

When we consider scarlet fever morbidity for this same period, we can only conclude that we have made little or no progress in our ability to control the spread of the disease. There is nothing to indicate a decreased prevalence of the disease during recent years. While morbidity rates vary within wide limits from year to year, there is apparently no regular cyclic sequence of scarlet fever epidemics. In epidemic years the greatest incidence of the disease most frequently occurs in the months of December and January, while in July and August the smallest number of

cases is usually recorded. In spite of the definite downward trend of mortality rates in the registration area, epidemics are frequently encountered where an unusually high death rate maintains. Minneapolis, for example, had a scarlet fever death rate of 4.7 in 1912. In 1913 the rate increased to 19.3, reached 26.8 in 1914, and then dropped back to 3.2 in 1915. Vaughan² thinks that the medical profession probably has come to regard the importance of scarlet fever too lightly, and calls attention to the extremely high death rates experienced in epidemics in certain communities. Shenandoah, Pa., in 1911 had a death rate of 219.4; Kenosha, Wis., in 1912 a rate of 203.1; and Great Falls, Mont., a rate of 146.7 in 1913. Chicago, in 1913, had 906 deaths in 10,600 reported cases of scarlet fever. The state of Minnesota for the period of 1915-1921, had a yearly average of 3,969 cases and 129 deaths. During the period 1922-1928, the average of yearly cases was 9,154, and average deaths 155.

Scarlet fever is essentially a disease of childhood, seventy-five per cent of all cases occurring in children under ten years of age. Although the disease is not as prevalent in younger children, about twenty-five per cent of cases occurring in children under five years of age, the fatality rate in the younger age groups is extremely high. Vaughan found that twenty-nine per cent of cases were fatal in children under one year, eight per cent fatal at two years and six per cent at three years of age. In the age group five to nine years, the fatality was 1.5 per cent. Pope¹ reports that fifty-two per cent of scarlet fever deaths in Providence were in children under five years of age. A consideration of the above morbidity and mortality statistics makes it clearly evident that much remains to be done, by whatever means possible, before we can hope for any appreciable reduction in scarlet fever cases and deaths.

ETIOLOGY

Since the early development of the field of bacteriology, the streptococcus has been known to be associated with scarlet fever. Since a lasting immunity usually follows an attack of the disease,

most workers were inclined to the belief that the streptococci isolated from patients suffering with the disease were secondary invaders, as other diseases produced by the streptococcus did not confer such immunity. A filterable virus was regarded by many as the causative agent. Gabritschewsky³ in 1907 isolated a streptococcus from scarlet fever patients from which he developed a vaccine for immunization against the disease. This vaccine contained both the killed streptococcus and its toxin, being a four day bouillon culture heated to kill the streptococcus. Following inoculation with this vaccine, a scarlet rash, sore throat, and nausea frequently developed. It was also observed that the second and third doses of this vaccine rarely produced a rash, and this was interpreted as meaning a rapid development of immunity to this specific toxin. Children vaccinated with a streptococcus vaccine made with organisms obtained from a case of erysipelas, did not develop any such rash. It would appear from these experiments that Gabritschewsky was working with the now proven specific organism responsible for scarlet fever. Moser⁴, in 1902, using streptococci obtained from severe cases of scarlet fever, injected the living organisms and the broth medium in which they were grown into horses, producing by this means an antitoxin which was truly antitoxic as well as bactericidal. The work of these investigators, however, was not followed up, and the idea of a specific streptococcus as the cause of scarlet fever was lost sight of until the classical work of the Dicks⁵ was reported in 1923.

In their earliest investigations into the cause of scarlet fever, the Dicks made bacteriologic examinations of blood, throat, urine, feces, and skin scales of scarlet fever patients, and of organs obtained post mortem. Cultures made in various media showed that the hemolytic streptococcus is the organism most frequently associated with the disease. With this organism, obtained in almost pure culture from the infected finger of a nurse who had scarlet fever, they succeeded in producing the first recorded case of experimental scarlet fever. The disease was produced in this volunteer by swabbing tonsils and pharynx with a four day culture of this hemolytic streptococcus grown on sheep's blood agar slants. All of the typical manifestations of the disease were presented in this case, including fever, sore throat, nausea, leucocytosis, intense rash, and desquamation. To determine whether the experimental disease was produced by the streptococcus or by a filterable virus associated with it, a group of

volunteers were inoculated with a culture of the same organism after it had been passed through a Berkefeld filter. These persons remained well. This seemed to demonstrate quite clearly that the cause of the disease is the hemolytic streptococcus and not a filterable virus.

THE DICK TEST

The Dicks demonstrated that filtrates from cultures of the scarlatinal streptococcus contained a soluble toxin specific for scarlet fever. This diluted toxin is now employed in determining susceptibility to the disease. Since laboratory animals are not susceptible to the toxin, standardization must be made on humans. Dick test material, as it is now distributed by commercial manufacturers, is scarlatinal streptococcus toxin diluted so that one skin test dose is contained in 0.1 c.c. of the solution. This amount is injected intradermally on the flexor surface of the forearm. Accurate readings can be made only by observing the reaction at from eighteen to twenty-four hours after the test is applied. A reddened area or slight flushing of the skin one centimeter or more in diameter constitutes a positive reaction, denoting susceptibility to scarlet fever. Skin reactions to scarlet fever toxin do not show induration as do the Schick and tuberculin reactions.

Susceptibility to scarlet fever of the various age groups closely parallels susceptibility of the corresponding groups to diphtheria. In some of their first work with the Dick test, the Dicks reported 41.6 per cent positive reactions in adults. In a group of 530 boys and girls from rural Minnesota homes, the average age being 17 years, the writer⁶ found 49.8 per cent giving positive Dick tests. Zingher⁷ found 26.3 per cent of this same age group in New York City giving positive Dick tests. The reliability of the skin test is indicated by the Dicks⁸ report of 2,157 pupil nurses and interns going on duty in scarlet fever wards, their skin tests being spontaneously negative. None of this group contracted the disease. Rosen⁹ and his coworkers report that in Jarcewo, Russia, no scarlet fever developed in a group of 1,620 children who had negative Dick tests. They do not state, however, how long this group had been under observation. In this community 34.9 per cent of children reacted positively to the Dick test. The skin test is almost invariably negative during convalescence from scarlet fever, becoming negative as a rule seven to ten days after the onset of the disease.

ACTIVE IMMUNIZATION

When active immunization was first practiced, three doses of toxin were employed. Inferior

products appeared on the market, and some of these were later discontinued by the manufacturers. It has been demonstrated repeatedly, that not every hemolytic streptococcus associated with scarlet fever will produce a specific and potent toxin. Many of the earlier reports on the use of toxin as an immunizing agent, as well as its use in the Dick test, are now of slight value since the product was not properly standardized and the dosage was inadequate. The amount of toxin contained in the three doses formerly used for active immunization was approximately 35,000 skin test doses. In recent years, products licensed by the Scarlet Fever Committee consist of five graduated doses of the toxin. The first injection contains 500 skin test doses, and the amount increases to 80,000 skin test doses in the last. The injections are made subcutaneously at weekly intervals. Two to three weeks after the last dose is given the Dick test should be applied to determine whether or not complete protection has been gained. The Dicks recommend the use of 0.1 c.c. of the skin test solution, or one skin test dose on one arm, and at the same time 0.2 c.c., or two skin test doses, on the other arm. If a positive reaction results in either test, the fifth dose should be repeated.

In a large group of susceptible persons immunized in this manner, the Dicks⁸ found, on retesting at the end of three years, that more than ninety per cent had retained their immunity. In their experience, from five to nine per cent of persons immunized become Dick positive again within one year and require a second immunization. Persons who are intimately exposed to scarlet fever for a considerable period following immunization, serve as the best criteria by which we may judge the value of this procedure. Toomey¹⁰ of the Cleveland City hospital states,—“I am extremely enthusiastic about the results obtained by active immunization according to the methods advocated by the Dicks. This routine procedure has practically eradicated scarlet fever among the resident population of our hospitals.” The Dicks have observed a total of 1,191 susceptible nurses and interns whom they immunized just prior to beginning service on scarlet fever wards. None of these developed the disease during this prolonged period of intimate exposure. Thirty-seven cases of scarlet fever, however, developed in nurses and interns who entered this service before being tested for susceptibility, or who were known to be susceptible and had not been immunized. In various institutions, the Dicks have immunized 11,584 sus-

ceptible inmates where scarlet fever was epidemic, and report that no single case of scarlet fever has developed in this group.

REACTIONS FOLLOWING INJECTION OF SCARLET FEVER TOXIN

Reactions of varying severity are encountered in certain individuals. Although they are more frequent following the smaller doses of toxin contained in the first and second injections, they may occur after any of the five doses. The mild local reactions are not significant, but combined local and general reactions may be expected in approximately ten per cent of all injections. The more severe reactions observed among the nurses whom we immunize, are characterized by redness and swelling at the site of injection, involving at times almost the entire posterior surface of the upper arm. Such local reactions are frequently accompanied by moderate constitutional symptoms including fever up to 102° F., malaise and nausea. General reactions rarely persist for more than forty-eight hours. In the more severe general reactions, a rash, typical of scarlet fever, may develop, accompanied by a sore throat which shows a diffuse injection. This reaction, encountered in less than one per cent of cases in our experience, may easily be confused with the actual disease, especially if scarlet fever is prevalent in the community at the time.

No serious accidents have been reported by the Dicks as a result of the use of scarlet fever toxin in many thousands of cases. Experimentally, they have injected as much as one million skin test doses of the toxin without producing nephritis or causing other injury. According to the Dicks, who have had the broadest experience in active immunization, 95 per cent of susceptible persons will be completely immunized by the five doses of scarlet fever toxin.

SCARLET FEVER ANTITOXIN

The antitoxin licensed by the Scarlet Fever Committee is a refined and concentrated product prepared in much the same manner as diphtheria antitoxin. The sterile scarlet fever toxin is injected in steadily increasing doses into a horse for a period of months, until, on testing, a serum of high antitoxin titre is obtained. The antitoxin is marketed in two sizes of syringe containers; one a prophylactic dose of 100,000 original neutralizing units, and the other a therapeutic dose of 300,000 neutralizing units. From various reports in the literature, quite conflicting at times, it would appear that favorable results, such as the prevention of complications, can only be hoped for when antitoxin is administered during the

earliest symptoms of the disease. Gordon treated 317 cases of scarlet fever with antitoxin, using as a control group 367 cases which received no serum. In those receiving antitoxin, sixty-six per cent remained free from complications. In the control group, forty-four per cent developed no complication. Multiple complications were present in eight per cent of serum treated and in twenty-five per cent of the nonserum treated cases. Otitis media, a frequent and often serious complication of scarlet fever, occurred one-third as frequently in those receiving antitoxin as in those receiving no antitoxin. Serum reactions developed in twenty-six per cent of cases receiving the antitoxin. Two of these reactions were designated by Gordon as severe. In Toomey's series of scarlet fever patients treated with antitoxin, thirty-eight per cent developed serum sickness. Toomey states that there was more illness from the serum reactions than from the scarlet fever itself. Spicer¹¹ reports serum reactions in fourteen per cent of cases treated with scarlet fever antitoxin, all of this group having had toxin-antitoxin previously. Administration of antitoxin late in the disease, in the presence of extreme toxicity and complications, will yield unsatisfactory therapeutic results. For this reason, the use of antitoxin cannot be delayed until it is determined whether or not a given case of the disease is going to be severe or mild. At the onset of symptoms, this distinction can rarely be made. Sufficient evidence has accumulated to warrant the routine use of antitoxin as a therapeutic agent in all cases of scarlet fever developing in an epidemic where the disease has a definitely increased virulence. Persons who have been definitely exposed to scarlet fever are protected in a majority of instances by the administration of a prophylactic dose of the antitoxin, or, as reported by Meader¹², by the injection of convalescent scarlet fever serum. Meader used 7.5 c.c. of pooled serum obtained from persons who had had scarlet fever within one year or less. Eighty-five per cent of persons definitely exposed to the disease were protected in this manner.

SCHULTZ-CHARLTON PHENOMENON

The intradermal injection of 0.1 c.c. of convalescent serum or scarlet fever antitoxin will produce a localized blanching of the rash in a scarlet fever patient. The blood serum of negative Dick reactors will also produce this phenomenon. The blanching reaches its height, as a rule, in twenty-four to forty-eight hours. The test is of value in the diagnosis of doubtful cases

of scarlet fever, since only a true scarlet fever rash will be blanched by these materials.

THE CONTROL OF SCARLET FEVER

Since people generally are not impressed with scarlet fever as a highly fatal disease, it is difficult to arouse a widespread interest in its prevention. The five doses of vaccine required for active immunization, together with the reactions that are sometimes encountered, tend to make specific prophylaxis a rather unpopular procedure. This does not exempt the physician, however, from offering such protection to his patients. By doing this routinely with the families under his care, he is carrying on a worth while educational program against preventable diseases and a definite responsibility has been met.

Epidemic scarlet fever in the average community is extremely difficult to control. I am convinced that in many epidemics of the disease in its milder form, probably one-half of the cases are never seen by the physician. In many such cases the parents do not suspect the true nature of the disease. In others, as long as apparently satisfactory progress is being made by the patient, the physician is not called, in order to avoid the inconvenience of quarantine. These mild, unrecognized cases and carriers invariably serve as disseminators of the infection, and are responsible for a continuance of the epidemic. Patients should not be removed from isolation until all mucous membranes have returned to normal. There should be no discharging sinuses on the body of a scarlet fever patient when released from quarantine. I have seen return cases arise as a result of releasing a patient who had a very slight serous discharge from one ear, following an otitis media, after twelve weeks of hospitalization. In institutional epidemics, a daily or twice daily inspection of all inmates should be instituted, and individuals showing any single suspicious symptom or finding should be immediately isolated. Closing of public schools during an epidemic is usually unwise. Inspection twice daily by an alert physician will usually result in early recognition of cases, permitting prompt and well directed preventive measures to be put into operation.

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BOTULISM

Botulism, due to the very active toxin of that anaërobic saprophyte which grows, not only in sausage where it was first observed, but in all sorts of meat, fish, preserved vegetables and even fruit is a very active poison and all the more dangerous because often there is no detectable change in the food so infected to warn the partaker thereof. The course is acute and the death rate very high. The cold pack or open kettle methods of preservation so much used of late in home canning, continue to implicate case reports. An unfortunate feature too, is that the universal purifier, heat, is of little avail; a case has been reported where the spores produced in some parobotulinum infected home preserved Bartlett pears were shown to survive two to three hours boiling.

Careless and unsanitary methods in handling food are responsible for its spread. The resultant paralysis of the respiratory center calls for appropriate stimulation and support.

Physicians who attended cases in the recent Brookings, Elkton, Flandreau, and Lake Benton outbreak are to be congratulated on their alertness, diligence, and success.

A. E. H.

CORONARY THROMBOSIS

Knowledge of the physiologic and pathologic processes underlying a complex of subjective symptoms and of physical signs often allows a very clean cut clinical picture to be drawn. A striking illustration of this fact is afforded by our greatly increased accuracy of diagnosis of changes of rate and rhythm of the heart since

the electro-cardiograph has established so thoroughly the physiology of these changes. One who uses the electrocardiogram constantly in accurate determination of the character of changes in the pulse and in the heart beat eventually is able, without the use of the instrument, to make a shrewd guess as to what the character of the change of rate or rhythm is.

At one time included in the symptom complex known as angina pectoris and undoubtedly the cause of the so-called "status anginosus" described by the older writers in that disease, sudden occlusion of a coronary artery as by a thrombus on an atheromatous patch, has become a definitely recognizable condition. Pain of cardiac origin, even though it may on occasion be manifest only in the epigastrium or in the neck or arm or both, and may in the latter instance masquerade as our hoary friend "neuritis," if it lasts beyond the period of the effort producing it should arouse suspicion.

When the pain is severe, agonizing, protracted beyond a very few minutes into a half hour or hour, suspicion becomes a well defined conviction. When to this is added pale cyanosis, collapse, one of the various tachycardias or gallop rhythm the conviction becomes almost a certainty.

When a suspicion of sudden coronary closure arises certain definite accompanying phenomena should be assiduously sought for. Fever may be present during the first few hours or days and may be more often found by taking rectal temperature. The degree of fever may not be high, is more commonly around a hundred degrees Fahrenheit but by rectum may reach even as high as 102.5. An increase in the number of leucocytes may begin within a very few hours, is commonly around 15,000 and may occasionally be considerably more and shows also as a rule a relative increase in the polymorphonuclear leucocytes. Changes in the blood pressure are com-

mon, a sharp fall below the previous level occurring at a variable time after the infarction and lasting also a very variable period. This drop in blood pressure may be of short duration but is usually of several days and sometimes of weeks. The blood pressure commonly gradually rises toward the normal or toward its former figure but does not always reach it. Not infrequently the final level of arterial pressure remains considerably below that formerly maintained. Changes in rate and rhythm of the heart beat are not uncommon. The most commonly observed changes are auricular fibrillation and ventricular tachycardia. Significant is the occasional occurrence of one or more of the grades of heart block and the degree of block may shift rather rapidly under observation. This occurs particularly when the interventricular septum has been involved by the coronary closure. Premature beats may occur but since they are so frequent in the later decades of life may be looked upon as significant only if their occurrence or frequency is associated definitely with the process.

The interested observer will watch daily, or even oftener, for evidences of a pericardial friction rub. Such a rub may be heard in only a small percentage of the cases, probably less than twenty per cent, but is of great significance when present, as it indicates that the infarcted area is of such an extent as to reach the epicardium. Such extension to the epicardium is found more often pathologically than clinically since only the ventral surfaces of the heart are so situated that the rub can be heard.

The electrocardiogram furnishes one of the more accurate methods of recognizing the damage to a mass of heart muscle and changes in the form of the electrocardiographic complex are of great significance and value in the diagnosis. However, if not obtainable, the picture above is sufficient to make a presumptive diagnosis and the presumption should be followed by effective management. An individual who has an area of myomalacia should be given the most stringent bed rest for a period of from six to eight weeks.

There is no set prognosis. A certain number die before help can be secured. Another group survive a few hours, up to 48 or 72, possibly in the status anginosus for a greater part of the time, then succumb. The third group may succumb during the period between about the ninth to the fourteenth or fifteenth day. The cases of rupture of the heart are likely to occur at this time. The patients who pass this period have a fair chance of survival and a not inconsiderable

number recover a very respectable degree of physical capacity and may survive for several years.

This thumb nail sketch has been given to stimulate physicians to a more ready recognition of this striking picture, the clinical recognition of which has been growing during the past two decades.

While coronary closure in its various phases, including the more dramatic thrombosis, had been known for some time previously, credit may be given to two Russians writing in the *Zeitschrift für Klinische Medizin*, in 1910, for calling attention to the possibility of clinical recognition. Herrick, of Chicago, beginning in 1912, has done much in this country to further our knowledge.

A monograph of extraordinary value by Levine appeared in *Medicine* in 1929, giving an analysis of 145 cases, and less than a year ago Conner presented a study of 287 cases before the Association of American Physicians, the article appearing in their *Transactions*, and in the *American Heart Journal*.

Conner's article has a particular value in calling attention to the not infrequent occurrence between 31 and 40, and still more frequent occurrence between 41 and 50 years of age, although the greater number occur after the half century has been passed.

S. M. W.

DR. HARRY N. MELECK

Dr. Harry N. Meleck, practicing physician of Minneapolis for the past 27 years, died Tuesday, February 24, 1931, at his home, 1101 Queen Avenue North.

Dr. Meleck was 51 years of age and had been a resident of Minneapolis for 40 years. He graduated from the Medical School of Hamline University in 1903. During his medical career he became interested in legal medicine, and in 1915, he received his degree in law from the University of Minnesota. He was greatly interested also in all cultural and communal activities of the city and was a member of University Lodge number 316, A. F. & A. M. of Zuhrah Temple and the Scottish Rite bodies.

He is survived by his widow, a daughter, Minnie, his father, George Meleck, all of Minneapolis; and three sisters, Mrs. J. Pollock of Chicago, and Ella and Gertrude Meleck of Minneapolis.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.

Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

Birth Registration

We are short a number of birth certificates for 1930, as compared with last year at this time. We feel that physicians and hospitals have sent in complete reports and that the shortage is due, in part, to economic conditions; that midwives and neighbors have been employed in many instances instead of physicians and that these women, unaware of the importance of birth registration, have neglected to file birth certificates.

Therefore, we appeal to physicians and health officers, whenever and wherever the occasion arises, to stress the importance of prompt filing of birth certificates; to urge parents to see that their children's births are recorded; to explain the necessity of birth registration and to report to us any 1930 births not recorded which may come to your attention. We ask this, secure in the knowledge that we have your full cooperation and certain that you know we appreciate it.

Botulism

We have again experienced an outbreak of botulism in North Dakota. It is singular to note that the only other outbreak of this disease in our State, according to official record, occurred but a few months ago, at which time four members of the Math Zimmer family of Golden Valley County were affected and all died.

Near midnight of January 29, seventeen persons partook of a lunch consisting of freshly boiled wieners, buns, light spice cake, cookies, salad and coffee in connection with a party given at the Edward Hein farm home near Grafton, Walsh County. The salad consisted of diced carrots, peas and cut string beans, which had been canned by Mrs. Hein last summer by the cold pack method, using a wash boiler for cooking in the absence of a pressure cooker. This vegetable compound was served on a lettuce leaf with a whipped cream dressing. The vegetables were not cooked after being taken from the jar in which they had been canned, before being incorporated into the salad.

Seventeen persons partook of the lunch and all ate of the salad except one. Three who ate of the salad soon became nauseated and vomited, more probably because of slight intoxication than for any other reason. The remaining thirteen all developed botulism and died therefrom. Two of the three survivors who had eaten the salad received a dose of botulinus antitoxin, types A and B combined, as supplied by Jensen and Salisbury, Inc., Kansas City, Mo., about the tenth day following the party. The third refused antitoxin inoculation. The one individual who did not eat the salad did not become sick in any manner.

The shortest incubation period was sixteen hours and the longest four and one half days. The shortest duration period was twelve hours and the longest five days. Death in each instance was due to respiratory failure. None of the fatal cases received antitoxin treatment. None of the original salad, or the unwashed jars from which the vegetable compound was emptied, were available for laboratory purposes.

Autopsy was performed on the body of one of the victims but showed no gross pathology. Stomach and intestines were empty and collapsed, in the main. Kid-

neys, spleen, and liver showed some congestion. Rugæ of stomach were pronounced, and some evidence of petechial hemorrhage. Peritoneal cavity empty of fluid. Gall bladder distended. Tissues generally dehydrated; lungs collapsed with some evidence of congestion; heart dilated and in diastolic phase; coronary vessels dilated. Meningeal vessels of brain meninges showed congestion. Small areas of discoloration in the medulla in region of basal ganglia. Specimen of spinal fluid negative for bacillus botulinus toxin. Bacillus botulinus, type A, was demonstrated in cultures made from section of large intestine. Ante-mortem specimen of blood from last victim was negative for bacillus botulinus toxin.

The only preventive for botulism after the infected food has been ingested is botulinus antitoxin and it should be kept available at all times. It has but slight therapeutic value, perhaps, yet offers the only known method of relief. Botulism is 100 per cent preventable from the standpoint of proper preparation of food stuffs. Submitting all canned goods to a temperature of 152 degrees F. for ten minutes before serving will render the toxin inert.

This recent outbreak is perhaps the largest on record in the United States from the standpoint of cases and deaths in a single outbreak from a common cause.

What Is a Stillbirth?

There is a great deal of discussion as to stillborn children—at what period of gestation is a certificate necessary and also what constitutes a live birth and what a stillbirth from a statistical viewpoint.

Eleven states have laws, rules or regulations. No two of them are alike. The legal and medical professions do not agree; the United States has no standard; the League of Nations in its Public Health Division has attempted for the past four or five years to establish an international standard without success.

North Dakota accepts any birth certificate for record regardless of period of gestation, but we prefer that none be filed under five months gestation. We insist, however, that a birth certificate be filed for every birth of seven months gestation, whether alive or stillborn.

Stillbirths require both a birth and a death certificate. There are 425 stillbirths, on an average, reported each year, or a rate of 2.9 per 100 live births.

Often the five and six months fetus shows signs of life, is therefore counted as a live birth and a death certificate filed. We consider that when a child shows signs of life for an appreciable time it is a live birth. These premature live births, of course, raise the number of our infant deaths. Out of approximately 5,000 deaths in North Dakota in a year, nearly 1,000 are infant deaths under one year. About half of these die before they are a week old and about 250 under one day. It is therefore obvious what effect these premature live births will have upon our infant death rate.

OUR BIENNIAL REPORT IS NOW READY
FOR DISTRIBUTION AND WILL BE SENT
UPON REQUEST.

PROCEEDINGS MINNEAPOLIS CLINICAL CLUB

Meeting of December 16, 1930.

The Minneapolis Clinical Club had been invited by the St. Cloud physicians to give their monthly scientific program at the monthly staff meeting of the St. Cloud Hospital, which was to be held at the Hospital in St. Cloud on the evening of December 16, 1930.

A bus was chartered and twenty members of the Clinical Club made the trip, arriving at the Hospital for a 6:30 dinner as guests of the staff. After dinner the doctors adjourned to the staff room where the meeting was called to order by their President, Dr. J. P. McDowell. After a cordial welcome by Dr. McDowell he asked the staff members to rise as he called their names, introducing them to the members of the Clinical Club. He then called on Dr. Moses Barron to conduct the meeting, first introducing the members of the Club.

DR. MOSES BARRON: It is a pleasure to be here again. I was here once before and enjoyed it so much that I wanted to come again, and we thank you for your kind invitation to come down here and give this program.

The Minneapolis Clinical Club was organized ten years ago for the purpose of giving the younger men an opportunity to get together and meet in a social way, to discuss rather informally various subjects in the different specialties. It is composed of the younger men; in fact, our constitution states that only the younger men may belong. We have thirty-three members and meet once a month, and this meeting tonight is typical of one of our regular monthly meetings so that you may see just what they are like.

The scientific program consisted of the following papers:

DR. J. M. HAYES read a paper on "The Treatment of Acute Empyema of the Gall Bladder." (Paper not yet published.)

DISCUSSION

DR. S. R. MAXEINER: I am very much interested in the report of Dr. Hayes' cases, and would have liked very much to have had an opportunity to look up my own records before discussing this paper.

I believe there are perfectly legitimate grounds in this field for differences of opinion, and that a lot of these differences of opinion will be based on personal experience, often to the extent of "burnt fingers." During six years of service as surgeon at the Minneapolis General Hospital and approximately eight years of service as consultant for the Government, and in my private practice, I have had occasion to see a good many acute gall

bladders and have personally come to the conclusion that, when it is possible to do so, the acute attack should be allowed to subside and the patient instructed to return for subsequent operation when the infection has entirely disappeared. In some instances, however, because the patient did not do well, we have been compelled to treat them surgically and practically always by drainage rather than by removal of the gall bladder. Following an experience several years ago in which three cases of acute empyema with gangrenous gall bladders died following cholecystectomy, I swung completely to drainage of the gall bladder, and since that time have not lost one single acute gall bladder case that I have been compelled to operate upon. In the last two or three years, I have operated upon three perforated gall bladders, all of which formed localized abscesses. In these, the abscesses were drained and the stones removed without getting inside the general peritoneal cavity.

Recently, in a conversation with Meyer, of Chicago, I find that his experience checks almost directly with my own, and in comparing his cases with those of some of his colleagues who were operating upon acute gall bladders, he was convinced that he was following the right plan. Ravdin, of the University of Pennsylvania, at the last meeting of the American College of Surgeons, reviewed their statistics and stated that their mortality was much higher with cholecystectomy than with cholecystostomy with acute gall bladders, and that even though 30 per cent of the drainage cases must return for cholecystectomy, the mortality from the double operation was lower than for removal of the gall bladder during the acute attack. I do not believe that it is possible to differentiate the gall bladder containing pus (empyema) from the severely acute gall bladder that may not be classed as purulent.

DR. J. M. HAYES' findings and his subsequent cases are deserving of close observation, and certainly we are all looking for an opportunity to improve our present methods. As for my own experience, I am basing my conservatism on my own lower mortality in conservative treatment of the acute gall bladder.

DR. O. J. CAMPBELL: I had my fingers burned in the other direction. I was called to see the father of a medical student because of two recent attacks of acute gall bladder disease. He was just recovering from an attack, so we deferred operation. Local tenderness had disappeared and we were on the point of operating, when I was called out of town for two weeks. I advised the student to have another surgeon operate. Returning, I found the patient had waited but was in the midst of another attack. Again we waited for the acuteness to subside, but, because of the frequent attacks, feared to defer operation until he had fully recovered.

At operation we found a badly diseased, almost gangrenous gall bladder containing large stones. The common duct was not distended but the pancreas was enlarged and indurated. There was no fat necrosis. I removed the gall bladder, feeling that it was too badly diseased to use for drainage. The patient, after an

initial rally, died of acute pancreatitis and peritonitis on the tenth day. Extensive fat necrosis was revealed post mortem.

This illustrates to me the fact that in acute cholecystitis we are confronted with a situation where fine surgical judgment is required. We cannot sit tight on all cases, neither should we dogmatically operate upon all. In the case just cited, had the man been operated upon when first seen, he might have escaped pancreatitis and death.

From the information at hand it is difficult to be sure of what constitutes a conservative attitude. For my own part, conservatism seems to dictate a policy of waiting, when the onset is not too stormy nor the attacks too rapidly following each other. When the attack is extremely violent with evidence of rather widespread peritoneal involvement it seems wise to operate. Whether or not the gall bladder is to be removed depends upon the exposed pathology, the age and general resistance of the patient. Where there is no actual abscess surrounding the gall bladder apparently it can be safely removed. In very elderly people, debilitated individuals, and those in whom collections of pus have already gathered outside the gall bladder, conservatism seems to indicate drainage rather than excision.

There is a point in technic which is possibly worth recalling. In dealing with the friable cystic duct, not infrequently the cystic artery becomes loose. Trying to clamp blindly in a well of blood is very dangerous. A finger slipped through the foramen of Winslow will allow the hepatic artery to be compressed between thumb and finger, while the blood is sponged out and the artery secured with forceps.

DR. R. C. WEBB: I think the proper word was mentioned when DR. CAMPBELL said that judgment should be used in acute cholecystitis. I feel that acute inflammation of the gall bladder is a serious condition, and that a definite rule should not be formulated for such patients as to whether one should permit the disease to subside, or adopt routine surgical intervention. When a patient has acute cholecystitis the surgeon should ask himself why he should *not* operate. There may be several reasons for not operating, i. e., the disease may be subsiding, or there may be other existing diseases in which an operation might create a hazard equal to that of acute cholecystitis.

In October of this year a patient was referred to me suffering severely from an exophthalmic goiter. It could be diagnosed at a glance at some distance and her basal metabolism was +55. On October 6 I performed a partial thyroidectomy and her recovery was very rapid. On October 12 she developed an acute inflammation of the gall bladder, the necessity of a second major operation became apparent and it was seriously discussed. I felt that, inasmuch as she had just been through several weeks of hyperthyroidism combined with an operation for goiter, I had a reason for delaying operation. On October 22, however, she had nearly recovered from the goiter operation and the acute gall bladder was not improving, so a laparotomy was made. The gall bladder was found full of pus with gallstones and there was a yellow necrotic area on the fundus the size of a twenty-five cent piece where it was about to rupture. The gall bladder was aspirated through this area, a cholecystostomy was performed through a stab wound, and she made an uneventful recovery. This patient's record illustrated clearly the dangers in waiting.

In operating upon the acutely inflamed gall bladder a cholecystectomy is ideal treatment, but the conditions vary so much at operation that such a procedure may not be consistent with the life of the patient, and a partial cholecystectomy or a cholecystostomy may be all that is possible.

I believe that our policy should be to use surgical judgment, to ask ourselves why we should *not* operate, and, when we do operate, to perform an operation that will give us a live patient.

DR. HAYES (in closing): I did not expect all the surgeons to agree with me on this subject. I never saw a group that did agree on it. However, as has been mentioned, surgical judgment is an important factor. One can usually have some idea as to how much the infection is confined to the gall bladder from the general appearance of the tissues. If the infection has manifestly spread to neighboring tissues and pus and necrotic tissue are present outside the gall bladder, this operation would not be advisable.

In these cases where we have the stone in the pelvis of the gall bladder or close to it, and a very evident pressure on the cystic artery, we are quite sure gangrene will result if the process is allowed to advance. This is the case in which I am advocating a cholecystectomy as soon as it can be done. Much of the discussion has not been on this type of case. If you will review closely the literature on this type of case, you may plainly see that this condition carries with it a large mortality. If it can be operated upon very early while the severe infection is still confined to the gall bladder, and care can be taken to prevent the spreading of the infection, the results are no doubt far preferable to those obtained by waiting.

DR. E. S. PLATOU presented a paper (read by DR. H. B. HANNAH) entitled "Poliomyelitis: An Evaluation of Our Present Methods of Treatment." (To be published in full later in THE JOURNAL-LANCET.)

ABSTRACT

Poliomyelitis undoubtedly is far more prevalent than is indicated by recognizable forms of the disease, having an age distribution of incidence corresponding somewhat to that of measles and diphtheria, and bearing a rather direct relationship to the density of population.

The serums of convalescents, of adult contacts and of the majority of "normal" adults, have protective properties, indicating that immunity to the disease is rather general, particularly in adults, resulting from recognized and more frequently from unrecognized forms of infection by the polio virus.

The possibilities of effective serum therapy point most favorably at present to the use of convalescent, adult contact, and "normal" adult blood serums. At present the convalescent serum seems to be the serum of choice in the early treatment of poliomyelitis, although there is some evidence that adult contact serum may be even more valuable. Should further study demonstrate

adult contact and "normal" adult serums to equal or exceed convalescent serum in effectiveness, we shall be provided immediately with an immense reservoir of antipoliomyelitis serum for therapeutic use.

If convalescent serum is not available, the blood or serum of adults (preferably contacts) probably will serve as a valuable prophylactic agent.

DISCUSSION

DR. BARRON: We sometimes see sporadic cases of this disease even if it is not present in epidemic form, and I think that we should have quite a general discussion of this paper.

DR. L. C. HANNAH: I should like to add a few words in regard to the early diagnosis of poliomyelitis. A child that comes down with headache, vomiting, some fever, pain in a group of muscles, stiffness of the neck, etc., should be looked upon as a possible case of poliomyelitis or beginning meningitis. Early spinal puncture will in many instances make the diagnosis for us. In ordinary poliomyelitis there is not so much stiffness of the neck. I saw a patient several years ago with Dr. Platon, and there was a question as to whether it was meningococcic meningitis or poliomyelitis. We decided the child should have convalescent serum. The disease finally turned out to be meningitis, but while we were waiting there might have developed symptoms of poliomyelitis. In other words, giving poliomyelitis serum does no harm, even if the disease is not present.

Another point is that poliomyelitis is a lower motor neuron lesion, very early the patient will show reflex disturbances, and some muscle or group of muscles in the body become paralyzed, so it behooves every man to go over the body carefully to determine whether there is any weakness anywhere in the body; and convalescent serum should be given, or adult serum used, as early as possible. If given later it is not nearly as effective as if given in the first twenty-four hours.

DR. G. E. SHERWOOD (Kimball): I would like to ask what one should do for these patients after their acute symptoms have subsided and they have improved, but there is paralysis left.

DR. E. T. EVANS: This subject is of a good deal of interest to me. I have seen 55 cases of acute poliomyelitis, and have been called in to nearly every case at the University Hospital and there have been 28 cases there.

One point about the use of the serum: Flexner states that if you give horse serum to a monkey it takes about one-tenth as much virus to give it polio as if given to the normal monkey. Autopsies of monkeys so treated show minute hemorrhages; in other words the meningeal barrier is broken down. And for this reason I feel that the use of commercial serum may prove dangerous.

In answer to DR. SHERWOOD's question about what to do for these patients after the acute symptoms subside, and there is still paralysis, we have had many such cases and we are routinely keeping the patients at absolute rest in plaster of Paris bandages and splints, followed by muscle reëducating, with muscle support and braces after four or six months.

DR. E. D. ANDERSON: It seems to me that in examining a child it is very easy to make a hurried check up on the arms and legs and it should be done routinely. It is a very simple thing to do and certainly calls your attention to any impairment of the muscles. The easiest

way I have found to do this is to have the child grasp my hand and squeeze it. Then I have him pull and push against my hand. Then I test for Kernig's sign with each leg and then have him raise his feet from the bed and push with his feet against my hands. It takes only about a minute, and if there are any disturbances you are immediately put on the track of them. I always follow this rule, not only when there is an epidemic but when any child is acutely ill.

DR. J. C. MICHAEL: In Minneapolis we have had, according to our Health Department, some 42 patients with poliomyelitis during 1930. The first case of the year was reported in the month of July. Eight of those patients were over 19 years of age. These figures show that we have not had very many cases; the number, if multiplied by ten, would indicate a severe epidemic. I have seen two adult cases, both atypical, during the last three weeks. There is one thing about the pathology of poliomyelitis and that is that the very first lesion in the nervous system is meningeal. The pial and arachnoid vessels are surrounded by increasing numbers of lymphocytic cells. This inflammatory reaction gradually follows the vessels into the cord or brain stem. Hence one looks usually for pain in the head and back, generalized hypersensitiveness, twitching, and drowsiness some days prior to a possible paralysis. The mortality rate is higher in adult patients.

I think Dr. Platon's paper epitomizes very comprehensively many of the important points in poliomyelitis, especially the use of convalescent serum which has created considerable interest during the last few years.

DR. H. B. CLARK (St. Cloud): I would like to ask how to obtain and handle the convalescent serum?

DR. H. B. HANNAH: In answer to that question, the State Board of Health has this serum all ready to use, but if you can't get that right away you can take the blood from some adult or other child of the family and separate the serum and use that at once until you can get some of the convalescent serum from the State Board of Health.

In answer to the question as to what to do with the patients afterwards, there is some difference of opinion between the neurologists and the orthopedists. We do nothing until the pain disappears out of a group of muscles, except to keep the patient absolutely at rest. In perhaps one and a half to two years the end result can be determined. During the early stages deformity must be prevented by putting on some appliance to prevent stretching of the paralyzed group of muscles. Then it is for the orthopedist to handle the case.

DR. R. G. ALLISON gave a lantern slide talk on "Foreign Bodies in the Air Passages."

ABSTRACT

It has always been comparatively easy to demonstrate foreign bodies that were opaque to the x-ray. But it was only a few years ago that Manges, who is associated with Jackson, of Philadelphia, described certain definite secondary changes in the lungs that enable us to recognize with a high degree of accuracy nonmetallic foreign bodies in the air passages. There are several things that a nonopaque foreign body can do.

1. It may cause an atelectasis of one or more lobes or even of an entire lung with a drawing over of the heart and mediastinum toward the

affected side. In this instance the foreign body is completely occluding the bronchus and allowing air neither to enter nor leave the affected lung.

2. It may not quite completely block the bronchus to the lung or to a lobe and give a typical picture of a drowned lung. In this instance there is no displacement of the heart and mediastinum.

3. By far the most common action of non-opaque foreign bodies is that of a ball valve action by which air is allowed to enter the affected lung, although the ball valve action of the foreign body prevents it from leaving. In this instance, it is very necessary to obtain plates at the height of inspiration and at the height of expiration for comparison. In the plate made on inspiration the two lungs look practically alike, and the heart and mediastinum are in normal or nearly normal position. In the plate made on expiration, however, the air is not allowed to leave the affected lung. For this reason, we obtain a marked emphysema of the affected lung with a marked displacement of the heart and mediastinum toward the unaffected side. This type of behavior is noted in practically all cases where nuts, fruit pits, and other vegetable materials have been aspirated into the air passages. These changes can best be shown by lantern slides which I will demonstrate.

DR. H. M. N. WYNNE read a paper entitled "Abnormal Bleeding from the Female Genital Tract." (Published in *THE JOURNAL-LANCET*, Feb. 1, 1931.)

DR. R. T. LAVAKE, who was scheduled to read a paper on "Everyday Obstetric Problems," asked that his paper be omitted in order to give the Minneapolis men time to make a tour of the new hospital after the meeting.

DR. F. H. K. SCHAAF gave a talk on "The Treatment of Cardiac Diseases" with a plea for the more rational use of the drugs most generally in use at the present time.

DR. BARRON (closing the meeting): On behalf of the Minneapolis Clinical Club, I wish to thank the staff and management of the St. Cloud Hospital for the very fine dinner and music we have enjoyed this evening, and for the kind invitation which made it possible to hold this meeting together. And I move that a rising vote of thanks be given them for this hospitality. (Rising vote.)

The meeting adjourned, after which the members were escorted on a tour of the hospital.

The return trip to Minneapolis was made by bus, and the consensus of opinion seemed to be that the evening had been a most enjoyable one.

H. BRIGHT DORNBASER, Secretary

BOOK NOTICES

SURGICAL DIAGNOSIS. By American authors. Edited by Everts Ambrose Graham. Philadelphia, W. B. Saunders Company, 1930. 3 vols. and Index. Price, per set: \$3.00.

Everts Graham presents to the medical world a work in diagnosis by a great many prominent authors. This work fulfills the special and timely need in the field of surgical diagnosis. These three volumes are very comprehensive and practical, for they help not only the surgical specialist, but the medical man as well, presenting the subjects from a practical point of view. The authors not only deal with diagnosis, but also with etiology and pathology, and include some fundamental principles of treatment. Not only the clinical phases of disease are presented, but also enough laboratory phases, technique, and sufficient variations from typical clinical pictures, to make these volumes of extreme value to all fields of medicine. Much time has been devoted to physiological principles, especially the chapters dealing with diseases of the thorax, biliary tract, and pancreas. No surgeon's library is complete without this modern work of diagnosis.

E. A. REGNIER, M.D.

A SYNOPSIS OF MEDICINE. By Henry Letheby Tidy, M.A., M.D., B.Ch. (Oxon.), F.R.C.P. (Lond.). Physician to St. Thomas' Hospital; Consulting Physician to the Royal Northern Hospital; formerly Assistant Clinical Pathologist and Medical Registrar to the London Hospital. New York: William Wood and Company, 1930. Fifth edition, revised and enlarged. Price \$6.00.

This is the fifth edition of a most useful volume revised and enlarged. There are few books in the practice of medicine that are quite as satisfying for the purpose for which they are written as this one. This book gives the epitome of medicine in very systematic manner, each subject being presented according to a well organized outline. It is written on a plan similar to that of Osler's book, but is much more concise and has the various subheads of any subject more clearly outlined. The essentials of nearly all subjects are presented.

This present fifth edition has been brought up to date by the addition of chapters on such subjects as tularemia, psitticosis, narcolepsy, agranulocytosis, and others too numerous to mention. Certain chapters such as those on lethargic encephalitis, ulcerative colitis, pneumococcal peritonitis and others have been carefully revised. Some of the chapters may be a little too brief, as for instance the ones on B. abortus infection and on periarteritis nodosa. The book is written in the easy delightful style of the Englishman. The outlook on some of the diseases may be rather geographical, as, for instance, in the discussion of tapeworm infestation, the *diphyllobothrium latum* is barely mentioned, with the remark that it is very rarely found outside of Finland, the Baltic countries and Switzerland. Such a reference would not be made by an American author, since the incidence of infestation with this tapeworm is progressively increasing in America. The chapter on vitamins is especially commendable, since it presents the essential facts of this rather difficult subject in a few brief pages.

This book is therefore of great value for students and practitioners alike, not for detailed information but for rapid reference of the essential details presented in a concise, systematic manner. It is especially valuable to any one who gives clinics and demonstrations or lectures to students and nurses, since it gives the basis for systematic presentation to which any further details may be added.

MOSES BARRON, M. D.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. R. V. Rogers, formerly located at Belcourt, N. D., has moved to Crow Agency, Mont.

Dr. O. H. Johnson has opened offices for general practice at Redwood Falls, Minn.

Dr. John H. Rishmiller has returned to his Minneapolis offices, after spending several weeks in Florida.

Dr. R. O. Griess, who was in practice for many years at Hastings, Neb., is now located at Jamestown, N. D.

Dr. Mark Vornholt, Harlowton, Mont., has been appointed health officer and county physician of Wheatland County, Mont.

Dr. Brainard P. Flynn, Redwood Falls, Minn., died recently after a few days' illness of pneumonia. Dr. Flynn was 41 years old.

Dr. George C. Foster, Chicago, has become associated with Dr. Rolfe Tainter, Fargo, specializing in his eye, ear, nose and throat practice.

Dr. John C. Drexler, a pioneer physician of Brandon, Minn., died recently at the advanced age of 79 years.

300 beds will be added to each of the veterans' hospitals at Fort Snelling and St. Cloud during the present year.

The sixtieth annual meeting of the American Public Health Association will be held at Montreal, September 14-17th.

A three day institute for public health nurses of Minnesota will be held at the University of Minnesota Hospital, March 30, 31 and April 1.

Dr. and Mrs. S. A. Donahoe, Sioux Falls, have returned home after spending several weeks in Havana, Cuba.

Dr. O. J. Hagen, Moorhead, Minn., has been named a regent of the University of Minnesota to represent the ninth district.

Dr. H. N. Meleck, Minneapolis, died this month from a sudden heart attack. He had been in active practice for many years.

Dr. C. A. Lester, Ft. Dodge, Ky., has joined the firm of Drs. Johnson & Steffens, Red Wing, Minn. Dr. Lester is a specialist on the eye, ear and nose.

Dr. Joseph Rogers, Alexandria, N. D., died recently at the Williston Hospital, where he had been confined for several months with a siege of typhoid fever.

The Ramsey County Medical Society has recently dedicated new club rooms in the new Fourth street section of the Lowry Medical Arts Building.

A new and modern hospital has been constructed at Lake Deer, Mont., at an expense of over \$125,000. Dr. Ivan Linsin is head of the medical staff.

Dr. G. B. Weiser, New Ulm, Minn., was in attendance at the meeting of the Council on Medical Education and Hospitals held in Chicago, last month.

Dr. Walter R. Ramsay, head of the Children's Hospital, St. Paul, made an address in St. Paul, this month, covering his recent visit to Russia and the health conference held at Stockholm, Sweden.

Dr. W. E. Morse, Rapid City, S. D., has become associated with the Black Hills hospital at Hot Springs. Dr. Morse will still continue practice in the former city.

Dr. W. G. Magee, who has been in active practice at Watertown, S. D., for nearly 25 years, has been elected chief of staff of the Luther Hospital of that city.

A joint meeting of the Minnesota Hospital Association and the State Tuberculosis Association will be held at Duluth on June 22, 23 and 24. Nationally known authorities will attend and address the convention.

Dr. Horace Newhart, Minneapolis, was the principal speaker at the annual meeting of the Rice County Medical Society at Faribault last month. Dr. Newhart's subject was "Mastoid Possibilities."

The Western Montana Medical Society have elected the following officers for the ensuing year: Dr. A. R. Foss, president; Dr. J. J. Flynn, vice-president; Dr. W. Heimstra, secretary. All of the officers are residents of Missoula.

Dr. C. A. Stewart, Minneapolis, was among the list of Twin City physicians who attended the conference on Child's Health and Protection, on invitation of President Hoover, at Washington, last month.

Dr. E. T. Bell, head of the Department of Pathology at the University of Minnesota, was among the leading speakers at the meeting this month of the members of the Cascade County, Mont., Medical Society.

Dr. J. P. Miller, Grand Forks, has been granted a new trial in the \$30,000 damage suit brought against him, claiming negligence in caring for an injured eye of one of his patients. The testimony submitted did not warrant any damages.

Dr. H. O. McPheeters, Minneapolis, gave a talk on the "Injection Treatment of Varicose Veins," before the Linn County Medical Society of Cedar Rapids, Iowa, last month. This was followed by a clinical demonstration with the injection of several cases and a discussion of supportive treatment of varicose ulcers.

At the regular meeting of the Watertown, S. D., District Medical Society held last month, Dr. H. M. Freeburg, Watertown, read a paper on "Spinal Anesthesia," followed by a lantern slide lecture on "Obesity" by Dr. C. J. Barborrka, of Rochester, Minn. Dr. P. D. Peabody, president of the State Society, was a guest of the evening.

At a recent meeting of the Lake Region Medical Society, held at Devils Lake, N. D., the following officers were elected: Dr. Clinton Smith, Devils Lake, president; Dr. L. L. Laugeson, Cando, vice-president; Dr. G. F. Drew, Devils Lake, secretary-treasurer; Dr. C. J. McGurren, Devils Lake, delegate to State Association meeting.

The Stutsman County, S. D., Medical Association held their monthly meeting at the State Hospital, Bismarck, Tuesday evening, February 24, 1931. The address of the evening was delivered by Dr. J. O. Arnson of Bismarck, his subject being "Heart Irregularities." The address was illustrated by lantern slides. Following the meeting the association were guests of the State Hospital Medical Staff at luncheon.

Dr. J. F. Corbett was elected president of the Minneapolis Surgical Society at the organization's regular monthly meeting in the headquarters of the Hennepin County Medical Society in the Medical Arts building. Other officers elected were: Dr. E. K. Green, vice-president; Dr. H. O. McPheeters, secretary-treasurer, and Dr. Martin Nordland, member of the executive council. Dr. A. T. Mann, retiring president, was named ex-officio member of the Society's executive board.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (610 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month of April will be as follows: April 1—Health Education (Third Anniversary). April 8—High Blood Pressure. April 15—Health in the Home. April 22—Nervous Exhaustion. April 29—Cancer of the Kidney.

The regular meeting of the Northwestern District Medical Society was held at Minot, N. D., last month. A clinical program was presented by members of the Society. Dr. J. A. Fowlie of Minot, and Dr. C. O. Rollie of Drake, were elected to membership. Dr. Coon and Dr. L. H. Braafladt were made honorary members. Clinical cases were presented as follows: Multiple Myelomata, Dr. A. E. Pierce; Actinomycosis, Dr. A. R. Sorenson. Officers for the year were elected as follows: President, Dr. H. O. Grangaard; Vice-president, Dr. P. H. Rowe; Secretary-treasurer, Dr. J. R. Pence.

Dr. Edward Bratrud, is at the head of the new St. Luke's hospital at Thief River Falls, Minnesota, which was dedicated last month. Surgical work there will be under his direction. After Dr. Bratrud was graduated from the University of Minnesota, he served a year as interne at Ancker hospital, St. Paul. Since 1918 he has been associated in practice in Warren with Dr. Theodore Bratrud, who died this winter. Dr. Bratrud has also done postgraduate work at institutions throughout the country at various times, and was admitted to the American College of Surgeons in 1924 and to the American Urological Association in 1930.

W. H. Hirst, St. Paul, 53 years of age, self-styled naturopath, entered pleas of guilty to two indictments charging him with maintaining an office and using the title "Doctor" in violation of the Basic Science Law. Hon. J. W. Boerner, Judge of the District Court, sentenced Hirst to pay a fine of \$500 or serve six months in the Workhouse for maintaining an office in St. Paul. Hirst paid the fine and on the other indictment charging him with using the title of "Doctor" he was sentenced to a term of one year in the Workhouse which sentence was suspended on the unqualified condition that he refrain from practicing healing in any way, shape or manner in the State of Minnesota. Judge Boerner informed him that if any report came to the Court that he was practicing he would be committed to the Workhouse without a trial. Hirst has been maintaining an office in St. Paul for the past 15 years and has been quite active in the attempt of the Naturopaths to secure recognition in this State.

The annual meeting of the Yellowstone Valley Medical Society will be held at Billings, Montana, on May 4th, and the following program will be presented. Dry clinics to be conducted at St. Vincent's hospital between 9 and 11 o'clock in the morning, followed by operative clinics at St. Vincent's and the Billings Deaconess hospitals between

11 o'clock and noon. The dry clinics will be conducted by Dr. L. W. Allard, Dr. W. C. Richards, Dr. S. Wernham and Dr. J. D. Barrett. The operative clinics will be conducted by doctors who have surgical cases to operate on that day. Following luncheon there will be a program at St. Vincent's hospital between 1:30 and 4:30 in the afternoon. Dr. C. H. Nelson will give a paper on the subject, "Respiratory Conditions with Especial Reference to Enlargement of the Thy-mus Gland." X-ray films and a discussion of the subject will be given by Dr. J. H. Bridenbaugh. A paper on the subject, "Pyelitis of Pregnancy," will be given by Dr. J. D. Barrett. A motion picture film on the subject, "Traumatic Surgery of the Extremities," will be presented under the supervision of Dr. J. I. Wernham. Dr. H. H. Culbertson will speak on "The Injection Treatment of Varicose Veins."

CLASSIFIED ADVERTISEMENTS

For Sale

\$20,000 Hospital and practice, rural. For sale or trade for Minneapolis income. Address Box 808, care of this office.

Location Wanted

Experienced physician and surgeon. Prefer Scandinavian or German community in Minnesota. Address Box 807, care of this office.

Wanted

Doctor and Dentist to occupy good location and fine office rooms. Reasonable rent. Call J. F. Danek, Main 1710, Minneapolis.

Laboratory Technician

Competent young lady with two years' experience in x-ray, physio-therapy, laboratory and nursing. Would like position in Clinic, Hospital or Doctor's office. Good references. Address box 797 care of this office.

For Sale

Well established practice, and 10 bed, 15 room hospital equipped. Full line of Physio-therapy apparatus. Office rooms, also living rooms if one wishes to use them as such. Good community, town of 1500 on coast to coast highway. Am offering this complete equipment with drugs, office furniture, X-Ray, etc., at a bargain with practice and good will included. Address Box 802, care of this office.

THE DOCTORS TALK ON NURSING

When 756 physicians discussed the nursing question informally, the greatest number commented on the fact that there is no shortage in the nursing supply, that registered nurses are generally competent, and that nursing charges are too high from the point of view of the patient.

This open forum for physicians was held by the Committee on the Grading of Nursing Schools, which is studying the problem of providing ample and adequate nursing service to the public, at a price within its reach. When the Committee sent out questionnaires to the physicians, it asked them to write their frank opinions on nurses and nursing on the backs of the questionnaires, after the formal questions had been answered.

Of 376 who talked about the shortage question, 281, or three-fourths, said, "There is no shortage of nurses." Of the 310 who discussed the capability of nurses, 264, or eighty-three per cent, said, "Nurses are generally competent."

A smaller number, 171, were interested in commenting on the cost of nursing service to the patient. All but twelve believed the charges to be excessive, from the point of view of the patient. On the other hand, of twenty-seven doctors who commented on the earnings of nurses, twenty-six said they thought the annual income of the nurse is too low.

The physicians who took part in this symposium on nursing represented many branches of the profession and came from ten representative States.

It is significant that, when they could talk of whatever they pleased, so many doctors should stress the same aspects of the nursing situation, and that there should be the general agreement that exists among the States.

These informal remarks check with the statistical findings, gathered from the questionnaires of 4,000 physicians. Thus, it was found that only two patients out of each 100 could not find a nurse when they needed one. This is confirmed by the general opinion of physicians that there is no shortage in the nursing supply. Nine out of ten, tabulation showed, answered in the affirmative, "Would you like to have the same nurse on a similar case?" Again, the large majority of those who commented on the ability of the nurse felt she is generally competent.

The Grading Committee has been studying some of the problems implied in these comments from the physicians. Its findings show that often, probably, the nurse is not to blame because she "registers against" certain types of illness; or that she lacks skill in special techniques. The reports of what the student nurse does in training reveal that important basic services are omitted from her program by many nursing schools, so that, as a graduate nurse, she either registers against such cases, or shows herself unable to perform properly the nursing duties involved in them.

Physicians commented on this relation between the training of the student nurse and the fitness of the graduate nurse to deal with certain types of patients.

Many physicians took pains to stress the value of the nurse's understanding of the mental habits of sick people, in writing of specific examples of nursing care, and her ability to be intelligent and tactful about home situations.

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CHRONIC NON-TUBERCULOUS LUNG LESIONS*

BY EDWARD L. TUOHY, M.D., F.A.C.P., The Duluth Clinic
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The subject I have chosen is such a very broad one that I may well explain why I have chosen it, as well as the method of my presentation.

I shall show a considerable series of roentgen films of the chest. Let me add that I am not a roentgenologist, but an internist. It would be far better could we show the actual patients. The reason for the choice of chest films is because they furnish such an excellent peg upon which to hang my thesis. I shall show these films with this excellent illuminator, and hope you may all see them clearly. These films could be transferred to lantern slides, but far too much detail is lost by that procedure unless we aim only to show gross differentiations.

A further reason for emphasizing the roentgen film is because of the extraordinary position it has come to assume in chest diagnosis. It is not that Auenbrugger and Laennec have been forgotten, but we are all "Missourians" in the sense that we desire to be "shown," and in all truth we like pictures. The sense of vision is over-amplified, disadvantageously restricting a cultivation of the faculties of touch and hearing. Gradually, however, the epoch making gleanings

through roentgenology are coming to assume their proper position in chest diagnosis—a beautiful elaboration of *inspection*. The faculties of the eye are very greatly extended.

Manufacturers of x-ray films, tubes and generators have made it relatively easy to get splendid standardized diagnostic films, not to mention the very great advances in fluoroscopy. Speaking from the roentgen diagnostic point of view, few organs in the body remain hidden from view. Perhaps the pancreas remains as the most enigmatic. Lipiodol contrast material in the bronchi is revealing the lungs in terms of position, ingress and egress of air, drainage, cavitation, presence of foreign bodies, in quite the inspiring manner that similar contrast material revealed the genito-urinary tract nearly two decades ago.

I shall not forget the first x-ray plates shown of pulmonary tuberculosis at the International Tuberculosis Congress in Washington, D. C., in 1908. These were viewed in the exhibition room but were not discussed at that great international program. They were likely given rather scant attention, but Dr. L. G. Cole★ has lived to see most of the "57 varieties" of tuberculin (also shown in the same exhibit) relegated to the same attitude of indifference endured by his pioneer glass chest plates. It did not require many

*An address delivered at a meeting of the South Dakota State Medical Association at Sioux Falls, S. D., May 21-22, 1930.

★ Pioneer New York clinician and roentgenologist, best known for his development of gastroduodenal serial roentgenography.

years to show their intrinsic value and stimulate their infinite improvement.

In the meantime the tuberculosis death rate has, generally speaking, been reduced at least one-half. The attitude that anyone having chest symptoms had tuberculosis until proven otherwise has greatly veered toward accuracy. In general, it can be said that x-ray has yielded its greatest service in assisting clinicians in declaring a chest normal; in ruling against an early suspected tuberculosis. A gradual correlation between shadowgraphs of the chest, anteroposterior, lateral, oblique and otherwise, with or without lipiodol insufflation, with the actual findings post-mortem, has elevated to a *totally unexpected diagnostic importance the field of chronic non-tuberculous lung lesions.*

Chevalier Jackson¹ and his students in this country are now the diagnostic prototypes for the lung-bronchial tract that the cystoscopists are for the genito-urinary tract. I ask you, therefore, to keep these general features in mind as I proceed with the showing of my films.

The importance of autopsies cannot be over-emphasized. The need of co-operation in medicine between various specialties, and of all of them with pathology, is never better shown than in this field and this kind of discussion. Overlapping pathology, such as malignancy, masked by inflammatory sequelae; pneumokoniosis by tuberculosis; Hodgkin's or sarcoma suggesting aortic aneurysm (especially in their terminal stages); these are confusion itself without satisfactory autopsy** elucidation.

No attempt will be made to make this discussion either all inclusive or deal with many statistics. The chief purpose of such a review is to call attention to possibilities and probabilities. The films shown in lieu of case histories or intimate recital of physical findings illustrate diagnostic pitfalls as well as accuracies. The cur-

rent medical literature has a great deal of interest which stimulates this sort of study. A few of these more easily available references will be given.***

I have spoken of the receding incidence of pulmonary tuberculosis. The first films shown draw attention to the ease of overdiagnosing pulmonary tuberculosis even with most excellent diagnostic chest films. This is particularly true of very fine mottling, suggesting either generalized systemic miliary tuberculosis or miliary tuberculosis of the lungs themselves. This is a post-war and influenzal epidemic development, but very especial attention has been given to it in the past five years. These deceptive "shotlike spots scattered over the usual lung area" bring into consideration certain conditions that look very much like tuberculosis:

1. Deep bronchiolitis.† (Some of these mottlings are very long persisting and slow to fade; a striking example of this was shown).

2. Metastatic lung carcinosis. (An instance was shown metastatic from a primary cancer at the pylorus. Not only was the x-ray film confusing but the specimen of the lung itself until it was sectioned histologically).

3. Pneumomycoses. (An instance was shown of moniliasis.)² Various molds have been much discussed.

4. Pneumokoniosis. Silicosis easily covers over 90 per cent of this group. Siderosis (we have had two cases come to autopsy) and miliary calcium deposits (often attributed to healed miliary tuberculosis) must be considered. Cement dust, rich in calcium carbonate, is said rarely to yield a "spidery-like increase in lung markings," but quite unlike silicosis.

5. Certain organic dust-like wheat. (These are always under suspicion as to possible mixtures with molds or ground quartz yielding free silica.)

6. Asbestosis. (Not encountered in our region, of course, but mentioned in the literature.)³

Sayers and Merewether‡ give an excellent outline of this deceptive field in lung disease now so universally approached through the inspection of roentgen films.

Silicosis is often complicated with tuberculosis of the lungs, which it likely invites. Siderosis may likewise encourage pulmonary tuberculosis, and is reported with it. While there is some difference of opinion and some hold that anthracosis inhibits tuberculosis, we can at least state that it does not encourage it.

Bohrod⁴ has recently reported two cases—one

** Dr. George L. Berdez, pathologist in Duluth for St. Mary's and certain other hospitals, now has a yearly autopsy service of about 400. This growing material, appearing at a weekly clinicopathological conference, through his masterly preparation is an ever increasing incentive for keener pre-autopsy clinical diagnoses. We may say that even the eye must be focused before it can see.

***Thus far these remarks have been drafted from the stenographer's notes, skilfully taken at the time of the meeting. Any one who has ever attempted to revise such material for publication will know that it is far more a technical triumph for the stenographer than a tribute to the coherence, the diction or the general plan of the speaker. We are prone to ask who it may be who revises the Congressional record!

† This review practically excludes the acute and subacute lung infections. The late effects of long standing sinus infection and broncho-hilar disease might be included, but is too large a subject in itself. In like manner there is a subdivision including "chronic pneumonitis" of the English writers. This group in the past has been a "catch-all" for bronchiectasis, neoplastic invasion, pneumomycoses, etc.

‡ Sayers, R. R., and Merewether, F. V.: An unpublished report presented at the twenty-sixth annual meeting of the National Tuberculosis Association, Memphis, Tenn., May 7-9, 1930.

a florid tuberculous bronchopneumonia, and the other a fibrotic tuberculosis developing upon pulmonary siderosis. For those interested the article is stimulating and valuable.

However, both silicosis and siderosis may advance to very extreme grades of lung fibrosis, with extraordinary massing of shadows (particularly in silicosis), without any tuberculous adjunct at all. It is well, therefore, to know these facts, and pay particular attention to those who have had prolonged exposure to dusty trades. Iron mines are not nearly as dangerous as copper, lead, gold or granite quarries (Montana, Idaho, South Africa, Vermont). A certain constitutional susceptibility is mentioned, but the main feature is persistent and prolonged exposure. Few show any signs before an exposure of five years, and some not until over twenty. The process, once begun, inclines to continue, even though the dusty zone is abandoned. There is a very large literature accumulating, and these references are worthwhile: (5, 6, 7, 8, 9, 10, 11, 12, 13).

The following outline is suggestive at least, though very incomplete, when we view the gross problems of non-tuberculous lung disease etiologically:

Inflammatory Lesions	I	
	{ Pus organisms	
	{ Spirochaetal lesions	
	{ Fungi ¹⁴	{ streptothrix
		{ monilia
		{ actinomycosis
		{ sporotrichosis,
		{ etc.
Chemical & Mechanical	{ Silicosis	
	{ Anthracosis	
	{ Asbestosis	
	{ Gas poisoning (?)	
Foreign Bodies	{ Inhalation	
	{ Emboli—fat—thrombi	
	{ Bullets—fragments—shrapnel	
Neoplastic	{ Carcinoma	
	{ Sarcoma	
	{ Hodgkin's	{ Lymphoblasto-
	{ Leukemia	{ mata
	{ Metastases—all kinds	

Outline II attempts to portray the gross lesions, their location, and suggested examples.

II

Bronchial Lesions:

Example { Tumor
Gumma
Foreign body

Bronchopulmonary:

Example { Tubular and Bronchiectatic
Cavitation—Bronchiectasis

Pulmonary:

Example { Lung abscess—gangrene
Emphysema—chronic interstitial
Pneumonia—pneumokoniosis

Pleural Invasion:

Example { Metastases
Endothelial tumors
Pneumothorax
Pyoneumothorax
Fistulae { bronchial—external—
subdiaphragmatic

Outline III gives us an opportunity to direct our attention to the major symptoms which bring chest cases to us.

III

1. Pain
2. Cough and expectoration
3. Haemoptysis
4. Dyspnoea and orthopnoea
5. Cyanosis (Lundsgaard)
6. Weight loss and prostration
7. Finger clubbing
8. Signs of metastatic invasion
(Particular attention paid to the head, spine, long bones)

Every clinician knows that pain in the chest is most universal, and far more often indicates upper respiratory infection than true thoracic disease. Naturally the most definite chest pain arises from pleuritis. It can be due to herpes zoster. Neurotic subjects exaggerate it. However, pain in terms of primary lung cancer needs special elucidation. It is not an early sign; when it develops it means invasion. It is persistent, quite continuous, and proceeds with the growth and its projections.

The heading of cough and expectoration leads to an analysis of the character and quantity of sputum, and if voluminous and occurring in the morning suggests bronchiectasis. If the material is very foul it should suggest spirilla, and arsenic compounds are most helpful. Fungi of all kinds, if of etiological importance, should be abundant and easy to find in smears (Castellani).¹⁵

Lung gangrene is rare, but an inkling of its presence can be gotten from the character of the sputum. In general, "layer sputum tests" have a place.

Re-alignment of our understanding of haemoptysis is necessary, since we are finding that it less and less indicates tuberculosis, although it should always make us think fully of the possibilities of tuberculosis. It occurs in order of frequency: in pulmonary tuberculosis—bronchiectasis—mitral stenosis††—lung infarction—carcinoma of the lungs. It is not easy for many clinicians to accept this statement, but it is nevertheless true. Cyanosis is not common in pulmonary tuberculosis even with very extensive disease.

†† This is intentionally the only reference made in this discussion to the very important group of cardiac conditions not only closely related to lung pathology but often the sole factor in their production.

but is seen classically in congenital heart disease, and develops after the later stages of silicosis. Lundsgaard has shown that detectable cyanosis occurs only when over 35 per cent of red blood cells are unoxygenated. Victims of Vaquez' disease are always cyanosed; those with less than one-third of the normal quota of red blood cells cannot become cyanosed.

The autopsy discovery of a good many obscure primary carcinomas of the bronchi has centered our attention upon this not uncommon entity. Recall that it has a faculty of metastasizing¹⁶⁻¹⁷ to the brain. Where a brain tumor develops too suddenly and rapidly for a primary brain tumor, keep in mind the possibility of metastasis from a hidden bronchus cancer. (Films of such a case were shown, as well as other distinctive and autopsy proven bronchus carcinomas.)

A summary made by Moses¹⁸ well expresses the situation:

- "1. Primary carcinoma of lung not uncommon.¹⁹
2. Signs and symptoms are not definite and suggest tuberculosis.
3. Physical findings are usually unilateral—thus differing from well established tuberculosis.
4. Cough is harsh and persistent—often non-productive—and haemoptysis not rare.
5. Constitutional depression is continuous and persistent.
6. Roentgen-ray does not yield early evidence; the bronchoscope may.
7. Post-mortems done routinely, where so frequently refused in chronic indefinite disease, frequently demonstrate its presence."

Certain very troublesome diagnostic problems were illustrated by films, from which the following general conclusions are easily drawn in terms of major physical chest signs.

IV.

1. Normal signs except those of inspection are produced by vibratory phenomena incidental to cardio-respiratory physiology.
2. Abnormal signs are produced by breaks in these functions.
3. Percussion, palpation, auscultation should not be widely dissociated.
4. Inspection and roentgen diagnostic utilization are one and the same method.
5. We should be less prone to establish an immediate diagnosis and more willing to catalogue our actual findings, and let the diagnosis gradually make itself.
6. Physical signs or phenomena may be final criteria (pathognomonic) of a disease. In

practice there are few such; accurate differential diagnosis consists in dealing with the numerous exceptions.

In illustration of these principles chest films were shown with the grossest of roentgen shadowing—first stage silicosis of the lungs; yet, these chests were hyper-resonant and had distant breath sounds, due to the associated emphysema occurring in this high grade interalveolar cicatrization.

Regional emphysema was shown in films where a tack had entered a bronchus upon the left side, producing the "check valve" plugging of Chevalier Jackson.¹ In like manner was shown an acute obstruction in a child where no foreign body could be seen, but the emphysematous zone led to the correct assumption that the obstruction was due to a non-opaque foreign body.

The converse of emphysema, or loss of alveolar air (atelectasis) was illustrated in films of tumor (carcinoma) invasion or pressure on the right upper lobe bronchial branch. The same patient showed paralysis of the right side of the diaphragm incidental to phrenic paralysis from pressure.

Then films were shown of the above tack case after bronchoscopic removal of the foreign body, where a rather large atelectatic area succeeded that which had been emphysematous. This was an instance of complete closure of Jackson, incidental to swelling, edema or mucous plugging. Later films showed that this segment did not regain its air filling for several months.

The inflammatory sequelae in terms of foreign body invasion of the bronchial tree (teeth, tonsil fragments, post-operative massive atelectatic states) were discussed and films shown. Agreement has not yet come as to the percentage of inflammatory lung complications that are hematogenously or bronchogenically produced. The latter route is now the one most stressed. Elderly or senile folk and young athreptic infants show easy invasion of the lungs by any material that attains their fauces. "Cough is the watchdog of the lungs." Disease, incoordination, anesthetics,²⁰ faulty bed position, drugs (especially opiates) may abolish it. Injury to the chest or any part of the body, embarrassment of muscular movements, increase in bronchial and throat secretion—all invite lung complications. Once established, whether embolic or otherwise, inflammatory sequences are instituted. Many undergo resorption and spontaneous cure; the rest have a chance to produce interlobar and empyematous accumulations; the mediastinum may be

invaded or tubular or saccular bronchiectatic cavitation arise from contact or ruptures into one or more portions of the bronchial tree. Films were shown illustrative of the ease with which anteroposterior and lateral films with lipiodol contrast filling shows these up. The newer approach to suitable cases with surgical attack was discussed, as well as mentioning the rather decisive therapeutic help seen by the simple use of the lipiodol itself. It must be stated, however, that the lipiodol technique, with good roentgen aid, cannot displace the bronchoscope. This difficult procedure should be available in every medical center. Not only is it absolutely essential in the removal of foreign bodies, but it is of great assistance in determining other forms of obstruction, such as narrowing from lung calculi, the determination of neoplastic growths, etc.

Two other groups thoroughly energetic in the production of abnormal chest shadowgraphs must be mentioned:

1. Lymphoblastomata. Confused, indeed, as to etiology and relationship, this related group of Hodgkin's sarcoma, leukemia (with or without distinctive circulating blood changes) continues beset with uncertainties for the doctor and fatality for his patient. They tend to mass about the hili of the lungs. They respond so magically to roentgen treatment that the method becomes of diagnostic value with questionable hilus shadow encroachment that soon produces early continuous devastating symptoms. Films were shown illustrating the difficulty in differentiating these hilus shadows from mediastinal abscesses and aortic or innominate aneurysm. Biopsies on available lymph glands are notoriously aggravating and pathologists are not always in agreement upon them.

2. Lung metastases. Some of these are so characteristic as to immediately disclose their source. (Such were shown arising from the sex glands—testicle and uterus.)

A small sharply circumscribed shadow, one-half inch in diameter, just outside the heart shadow on the left, was shown, which proved to be a metastasis coming seven years after a very successful removal of a carcinoma of the sigmoid. Increasing experience of pathologists indicates that no matter how many years intervene after the removal of breast carcinomas, you may be

quite certain, if chest symptoms arise and shadows appear, that either the lung parenchyma or pleura is metastatically invaded from the original primary growth.

It is not difficult to assemble a library of chest films that will illustrate almost every known type of lung invasion. Obviously, however, these roentgen films are only an introduction to a study of the pathological conditions found. Disease cannot be successfully studied or prevented by any isolated measurement that does not take into account the time element involved in incidence, onset, course, development, advance, retrogression, death or recovery. Miners, however, test pit the earth to gain data as to what is underneath. Thereafter the real mining begins. I hope, therefore, that I may have stimulated you with this type of "test pitting," and that you may be stimulated to mine your chest cases for their very great non-tuberculous possibilities.

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INTRACAPSULAR FRACTURE OF THE NECK OF THE FEMUR. A REPLY TO DR. ROYAL WHITMAN OF NEW YORK

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It would indeed be the height of temerity to accept in any other spirit but that of the neophyte, the corrections and suggestions of Dr. Royal Whitman, as published in this journal on June 15, 1930. Dr. Whitman's work on injuries of the hip in children (fracture and epiphyseal separation) is classic, and was the first to pave the way in the treatment of what were practically unrecognized conditions until then. His numerous original contributions on the abduction method have been the cause of the lessening of crippledom the world over. Therefore all possible honor to Dr. Whitman!

For those who do not know of, or who have forgotten, this "controversy," Dr. Whitman's article entitled "Comments On the Application of the Abduction Treatment of Fracture of the Neck of the Femur"¹ was elicited by a sentence in a previous paper in which I tried to describe briefly some of the salient points of Bohler's methods in treating various fractures.²

The offending sentence was: "In fractures of the neck of the femur Bohler uses the classical Whitman method, in spite of its too numerous poor results even in the hands of the best surgeons and orthopedic specialists, the fault probably lying with the method." The sentence itself might perhaps have been phrased a little better. (The conclusion, by the way, in this sentence is my own.)

Nevertheless, the value of any surgical method can only be judged, first by its results in the hands of its author; second, by its results in the hands of honest, capable, and painstaking imitators.

Dr. Whitman's "Comments, etc."¹ can be summed up in his own conclusion. "I conclude, however, that by far the larger proportion of too numerous failures may be attributed not to the fault of the method but to its faulty application, even at the hands of distinguished surgeons and orthopedic specialists."

Dr. Whitman, by the way, quotes in his article the statistical end results of several surgeons; all of them foreign. It is therefore apparent that Dr. Whitman approves of the idea of the statistical approach in the determination of end results. It is to be regretted that Dr. Whitman did not publish in this article (or any other, as

far as I can ascertain) his own end results in the use of his method for the treatment of this formidable fracture.

Surgeons of America are practically agreed that the Whitman treatment for intracapsular fracture of the neck of the femur is, up to now, the best closed method of which we know. It is also definitely proven that the percentage of cases obtaining bony union as well as good functional end results has been markedly increased as a result of the use of the Whitman method.

But, alas, the percentage of favorable end results is as yet not favorable enough. Publication of this communication has been delayed until after the public appearance of a report of the commission appointed by the American Orthopedic Association to study the end results of intracapsular fractures of the neck of the femur.³ Our own end results (a very small reportable group) are included in the commission's report. I willingly admit that in our cases, which did not get well, the bad results were attributable, probably, "not to the fault of the method but to its faulty application."

This commission was composed of men of international reputation. It collected end results from representatives and reputable surgeons and clinics of America. The report includes many items of interest in addition to an estimate of the worth of this particular method. The report (alluding to cases under sixty years of age) has the following to say regarding the Whitman method. "The method of closed treatment employed in 210 cases of this second series from eight clinics was the Whitman method, either in detail or in principle. Of these, 113, or fifty-three and eight-tenths per cent, resulted in proved bony union at the end of one year or more after the treatment had been instituted." The end results of the Whitman treatment are therefore not as good as many of us had anticipated.

Whitman did not give his figures at the London joint meeting of the American and British Orthopedic Associations in 1929. In the discussion, and upon inquiry, Whitman stated that he did not publish his statistics. This London meeting was an important one. One of its main features, as announced, was a discussion on "The Treatment of Fractures of the Neck of the Fe-

mur With Special Reference to End Results." Nearly all the essayists published statistics of end results. Dr. Whitman did not.

In this particular fracture the percentage of nonunion does not at all compare with any other fracture. Nonunion in other types of fracture is comparatively rare.

The entire subject is of importance. The chief reason why I insist upon it is because in our Northwest the number of malpractice lawsuits against doctors for poor results in fractures is markedly on the increase. It simply will not do to have the impression gain ground that when we use the Whitman method we must expect cure in the great majority of cases, when today the actual facts seem quite different. It is for this reason that I was moved to write this rather voluminous reply to Dr. Whitman in the admira-

tion for whom I yield to no one. Dr. Whitman's "Comments on the Application of the Abduction Treatment of Fracture of the Neck of the Femur,"¹ in the hands of some unscrupulous lawyer, might unjustly cause much trouble for one or another of our profession.

CONCLUSION

1. In two hundred and ten cases of intracapsular fractures from eight clinics there occurred bony union in 53.8 per cent of the cases when the Whitman method was used.

2. Nevertheless this method is to date the best "closed" one.

3. I believe that the world of medicine would welcome a report of the end results of Dr. Whitman's own cases of intracapsular fracture.

1. JOURNAL-LANCET, June 15, 1930.

2. JOURNAL-LANCET, January 15, 1930.

3. Journal of Bone & Joint Surgery, XII, 4; Oct., 1930. p. 966.

DRAINAGE OF THE BOWEL*

By DONALD MACRAE, JR., M. D.
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The drainage of the intestinal tract by means of a catheter or large rectal tube at the proper time has not received the consideration from the profession that the procedure deserves. In my jaunts about the country, I have been surprised to find few hospitals in which the surgeons resort to jejunostomy, except in rare and exceptional instances, usually when the patient is semicomatose.

In my hands and in the experience of my immediate surgical friends having acquired the proper technique, drainage of all suspicious cases has been found not only a life saver but a marked factor in establishing a smooth convalescence.

Arguments against drainage are largely from those who depend upon dog experimentation. I have no quarrel with those experimenters who favor salt or chlorides. I am heartily in favor of these methods and use them constantly. However, our work on intestinal drainage has been carried out on the living human and much of this prior to the glucose hypertonic salt solution era. Objections based on the difficulty of closing the enterostomy after operation are also frequent.

Of course drainage is bound to persist if an obstruction remains in the bowel lower down; enterostomy here in itself is a life saver no matter how disagreeable the consequences. The moment the obstruction is released, however, every

little difficulty is found when the sinus closes spontaneously.

In our experience, with one exception the drainage wound closed within twenty-four hours after removal of the catheter.

Enterostomy is an old procedure, but not until Bonny demonstrated the fluid content of the upper intestinal tract in obstruction, and later on, about 1916, when Dr. McKinnon, of Lincoln, Nebraska, established a simple, rapid technique, did I become impressed. At first I performed these operations only in the desperate type, much as McKinnon advocated. Then I thought, why wait until the patient is seemingly almost hopeless, why not anticipate trouble and place the life saver teen years ago, our troubles have been decreased fifty per cent. Of course when indicated we use in position while the patient is yet in fair condition. Since beginning this technique, over four-the salt under the skin and glucose in the veins in addition to our bowel drainage. However as has been said the technique gave a markedly lowered mortality prior to the intensive salt and glucose day.

Indications for intestinal drainage:

1. All postoperative cases with obstinate distension with or without peritonitis present (paralytic ileus excepted).
2. After all bowel resections.
3. All cases of intussusception.
4. Immediately and during an operation when

*Read before the South Dakota State Medical Association meeting, Sioux Falls, South Dakota, May 20 to 22, 1930.

peritonitis or obstruction may be feared or anticipated.

I wish particularly to draw your attention to number four, for here is where we claim originality. It is here that the technique shines out as a preventive measure.

For instance, an operation for acute appendicitis is being performed. On opening the abdomen the organ is found ruptured; the contamination is not marked yet we fear trouble ahead. Here, it is our practice to drain the upper small intestine and perhaps, not always, to drain the pelvis with the patient in the Fowler position.

In all bowel resections the drain is placed above and not far from the anastomosis, provided the small intestine is not over distended. If this bowel is markedly distended a catheter is placed high up in the gut. In nearly all acute, large bowel obstructions, regardless of immediate resection, we act as the case may indicate.

In cases where unusual trauma may be necessary to relieve adhesions, or where large areas of peritoneum are denuded as in the separation of the bowel adherent to large tumors, a catheter is placed in the normal bowel above the situation of the traumatized gut.

In intussusception, our early experiences of years ago were disheartening where the gut was delivered, even when seen quite clearly. Since we have added the enterostomy above the implicated bowel the picture has changed. I am convinced that babies die quickly from a small gut toxemia. I am equally certain that even after delivering the bowel, though the appearance seems fairly satisfactory to the eye, in these cases there is a temporary loss of function for a day or two, permitting the same type of toxemia we find in the definitely obstructed cases. The enterostomy relieves the situation, and after a few days, when the bowel has regained its function and acts through the normal rectal route, the catheter may be discontinued. In addition the enterostomy tends to prevent a reingestion.

TECHNIQUE

The technique is most important. I have seen a number of postoperative jejunostomies performed elsewhere with persistent fecal drainage, loss of weight, ulcerating abdominal skin, etc. In all these the technique has been faulty. In most of them the intestinal drainage tube was permitted to emerge through the abdominal incision; this should never be done. Infection of the whole wound is almost sure to occur, with resulting sloughing of bowel, etc., etc.

A number 18 rubber catheter is used in all small and large intestine work, unless we wish to hold a temporary or permanent artificial opening

in the large bowel; in the latter case we call for the rectal tube.

If an incision has already been made in the abdomen and a jejunostomy is indicated our procedure is about as follows:

If a high jejunostomy is desired, the freshly gloved hand is passed up and to the left and a loop brought out through original abdominal wound.

Numerous packs are placed about the loop of bowel. A straight needle is threaded with plain No. 0 catgut. The needle is then passed through all coats of the bowel; two or three perforations are sufficient. Next the needle and catgut are passed through the catheter, preferably about three inches above its perforated end. Then with a sharp blade stab a perforation in the bowel is made and catheter inserted and tied in place. This through and through suture plus its attachment to the catheter insures fixation and will not permit the tube to slip from the bowel. Next a purse string of chromic No. 0 gut is passed through the serosa about one-fourth inch from tube. With the assistant pushing inwards on the catheter the chromic gut is tied. Next a second suture exactly as above is inserted and tied. Then thoroughly cleanse the field, remove all gauze packs and change gloves. Now pull down the omentum and with the left hand in abdomen, the right hand holding the knife, an opening not larger than the catheter is made to the left and two inches or so above the umbilicus, a long curved forceps is inserted into the stab and past the omentum and then through the original abdominal wound. The proximal end of the inserted catheter is grasped and pulled through the stab wound and omentum, and firmly brought up and held to the skin by one silk worm suture tied around but not passing through the catheter.

The original laparotomy wound is now drained or closed as indicated. The main wound is protected from catheter contamination by placing a large pad of rubber tissue over the dressings, and held to the skin by a broad strip of adhesive. The catheter stab should be dressed separately. All catheters are tied or vulcanized at the distal end and cut off after the operation is completed.

In cases of a postoperative emergency jejunostomy, a small incision in the abdomen and to the left of the rectus is made under novocain. A high loop is brought out and same procedure followed.

No attempt is made to utilize the omentum in sigmoidostomies or cecostomies.

The operation is performed in a very few moments and when proper technique is employed does not add extra risk to the patient, but on the contrary may be the means of saving a life.

This is the fourth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

BY LEO G. RIGLER, M. D.

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DISEASES OF JOINTS

A. Normal Appearance

The normal joint appears as a clear space between the ends of the two bones. The cartilage itself is not visible on X-ray and any changes which take place in it are shown by an approximation of the two bones composing the joint or a reduction in the clear space which is normally visible between them. Normal cartilage never shows calcium and the presence of calcium within the joint means either a change in the articular surfaces of the bones or a traumatic condition of the cartilage.

B. Points to Be Noted in the Study of Joint Lesions

1. *Peri-articular swelling.* This is shown by a haziness about the joint area, loss of detail in the joint itself, and actual swelling of the soft tissues about the joint.

2. *Effusion in the joint.* This can be determined accurately only in the knee joint where the separation of the patella from the femur and the floating upward of the patella indicate an effusion. In the other joints, especially the shoulder, large accumulations of fluid may manifest themselves by a separation of the component bones of the joint.

3. *Erosion of the cartilage.* This manifests itself as a diminution in the joint space either regular or irregular.

4. *Atrophy or eburnation of the bones about the joint.* Atrophy manifests itself as an increased radiability of the bones, eburnation as a decreased radiability or increased density of the bones.

5. *A marked haziness about the joint.* This appearance suggests that the patient has moved although the bones above and below the joint appear to be clear. This is usually due to exudate in the soft tissues about the joint.

6. *Destruction of bone.* This is shown by the presence of defects in the bones about the joint either at the articular surfaces or behind them.

7. *Production of new bone.* The presence of calcium within the cartilaginous area itself or along the sides of the bone indicates the inflammatory process.

C. Classification and Terminology

With the extent of our present knowledge a classification of joint lesions for X-ray diagnostic purposes is just as difficult and unsatisfactory as for clinical purposes. In general two types of reaction may be observed in the usual joint infections. One is an atrophic change in the bones which usually accompanies a proliferative change in the soft tissues. The latter, however, cannot be seen on the X-ray film to any great degree. The other is a hypertrophic change in the bones which usually accompanies a degenerative change in the soft tissues. Associated with both of these will be seen destruction of both cartilage and bone to a more or less degree. Using these criteria the findings, visible in the joints, in the various clinical entities which are recognized, are listed below. This classification is incomplete from an etiological or clinical viewpoint but expresses well the findings from a Roentgenological viewpoint.

D. Findings in Joint Lesions

1. *Acute rheumatic fever.* There are no changes except for a peri-articular swelling or, in some cases, an effusion into the joint. Usually there is no change in the cartilage or bone.

2. Acute arthritis.

a. General considerations. This refers to that type of arthritis in which the etiological agent is well known and in which the disease is most frequently monarticular. Included in this group are the streptococcic, staphylococcic, pneumococcic, gonococcic, tuberculous, and syphilitic arthritides. The latter two are treated separately because of their unique character. The others give much the same findings so are considered together.

b. Findings. The appearance of the joints on the X-ray examination can be best classified by stages in which the following findings occur.

- (1) Periarticular swelling and effusion into the joint.
- (2) Bone atrophy or decalcification, manifested by decreased bone density.
- (3) Cartilaginous destruction manifested by narrowing of the joint space.
- (4) Bone destruction manifested by areas of defect in the ends of the bones either on

the articular surfaces or near them. These defects often look like punched-out areas.

- (5) In gonorrhea a tendency to involve the inner surface of the patella.

These lesions are usually single but may be multiple. If the infection becomes purulent the degree of bone and cartilaginous destruction becomes much more marked and there is more haziness about the joint due to the thick exudate. All the cases do not pass through all these stages but may stop before going through the whole process. The stages are not sharply demarcated but tend to overlap each other.

3. *Chronic arthritis resulting from the above group.* This represents the end stages of the process described above in which bone repair has taken place. It may show all the findings described under acute arthritis and in addition new bone formation extending around and into the joints. In the severe cases bridges of bone may occur across the joint producing bony ankylosis. Trabeculae of bone can then be traced from one bone directly to the other without any break in their continuity. Fibrous ankylosis may occur without any X-ray manifestations.

4. *Chronic arthritis of non-specific etiology.*

a. General considerations. In this section may be recognized a large group of joint diseases, probably of infectious origin, but possibly metabolic in nature. They are usually polyarticular and likely to be slowly progressive. They tend to separate themselves into the following groups from the standpoint of the X-ray findings but it is possible that these are simply different stages of the same process.

b. Periarthritic form.

- (1) Findings. The involvement is chiefly in the soft tissues about and in the joint so that on physical examination the joint may appear greatly enlarged. The X-ray findings are very slight, however, represented chiefly by bone atrophy or decreased density. There may also be some cartilaginous destruction. Marked deformities may occur due to the fibrous tissue production.

(2) Characteristic features.

- (a) Bone atrophy.
(b) Little or no bone or cartilaginous destruction.

c. Atrophic form.

- (1) Findings. This is similar to the above except that there is definite cartilaginous and bone destruction. The latter may take on a characteristic ulcerating form in

which large punched-out areas appear on the articular surfaces. No new bone formation may be seen at any time during the process. Marked deformities are frequently present out of proportion to the X-ray findings.

(2) Characteristic features.

- (a) Bone and cartilaginous destruction.
(b) Little or no new bone formation.
(c) Bone atrophy.

d. Hypertrophic form.

- (1) Findings. In this group there is excessive bone production with numerous spurs passing from one joint surface to the other and extending beyond the joints into the tendons. The tendency is for the bone production to surround the joint rather than extend into it. There may be slight narrowing of the joint space but on the whole there is little or no bone or cartilaginous destruction. This condition is insidious, slowly progressive, usually comes on with old age and is most marked in the spine. Joint bodies may frequently occur due to broken off spurs of bone entering into the joint. The X-ray findings are usually more marked than the deformities.

(2) Characteristic features:

- (a) Large amount of bone production.
(b) Comparatively little bone destruction or cartilaginous absorption.

5. *Gout.* This is similar in general to the chronic arthritis of non-specific etiology except that there may also be present characteristic rounded areas of lessened density in the ends of the bones just behind the articular surfaces. These are due to a deposit of urates which are quite radiable. Both bone destruction and bone production may be present. The characteristic tendency to locate in the great toe or knee is also notable.

6. *Osteo-chondritis dessicans.* This is probably associated with trauma plus some unusual type of infection. It may be associated with an abnormal growth of cartilage. It almost always occurs in the knee joint but may be present in other joints. It shows a small fragment of the condyle near its articular surface completely detached. This detached fragment may pass into the joint and form a joint body.

7. *Osteochondromatosis.* There is extensive production of new bone in the joint and along the tendons, the appearance suggesting a sort of joint

tumor. The bone production appears in lobulated form.

8. *Charcot joint*. This is due to syphilis or syringo-myelia. This condition may show an extensive, extreme destruction and disorganization of the joint with a large amount of bone production. Large number of spicules are seen in the soft tissues. The bones become eburnated so there is increased density instead of atrophy and almost invariably a periostitis in the immediate neighborhood about the joints. Fractures are frequently present and the disorganization of the joint is the most extreme of any of the joint conditions. A striking feature, especially in the early stages, is the increased density, (eburnation) of the ends of the bones.

9. *Tuberculosis of the joints*. This gives the following findings:

- (a) A marked haziness about the joint occurs due to periarticular infiltration with thick exudate.
- (b) A high degree of atrophy of the bones about the joint is fairly constant. In children this manifests itself as a white line about the outer margins of the epiphyses of the bones about the joint with a comparatively clear center, the clearness of the center being due to the marked degree of atrophy or decalcification.
- (c) Destruction of cartilage is shown manifested by a narrowing of the joint space. This des-

truction occurs almost anywhere in the joint. Destruction of bone also occurs. This may be more marked than in the other types of infectious arthritis and may occur in marked degree before the onset of the cartilaginous destruction.

- (d) Bone production is likely to be minimal and usually is absent.
- (e) Old tuberculous lesions show increased density of the bones around the joint, fibrous ankylosis, but no definite areas of the new bone production. Atrophy of the bones, however, may also be present.
- (f) Marked dislocations and displacements are frequent.
- (g) There is usually marked soft tissue swelling and there may be sinuses also.
- (h) Caries-sicca is a special form of tuberculosis occurring most commonly in the shoulder. Here we see only marked atrophy with a somewhat cystic appearance of the bone.
- (i) With secondary infection through a sinus, bone production may occur.

E. *Value of X-ray Examination.*

This method gives much less information than in other parts of the body. Nevertheless it is a distinct aid in making the correct diagnosis, especially of tuberculosis. It also gives valuable information as to the extent of the process, the degree of involvement, and the progress of treatment.

(Continued in the next issue)

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1715.

A white woman, 43 years of age, was admitted to hospital October 28, 1930, at 1:20 P. M. She had a spontaneous abortion four and one-half weeks ago and passed a macerated six months' fetus. A few days later she sat up in bed. A day after she sat up, she developed "pleurisy" on the right side which subsided shortly and went to the left side. She remained in bed until October 24 (four days ago). On the twenty-fourth she sat up in bed. Following this she had a

severe chill and fever and was irrational. On the twenty-fifth she had a cough and pain in the chest. On the twenty-eighth her cough was worse and she vomited severely. She had fever at the onset of the pleurisy but was then fever free until the twenty-eighth. On October 25 she passed blood clots vaginally.

Examination showed respirations to be embarrassed. There was dilation of the *alae nasi*. The least exertion caused increased dyspnea. The patient appeared

drowsy. Excursion was limited on the left. There was increased tactile fremitus on the left base. Percussion revealed dullness in the left lower lobe. There was bronchial breathing in the left lower lobe. There were crepitant râles in this area. There was increased transmission of whispered voice. There was a to and fro friction rub in the right midaxillary line at the base.

A blood count showed the hemoglobin to be 63 per cent, erythrocytes 3,670,000, leucocytes 21,150, with 90 per cent polymorphonuclear leucocytes. The white count remained about the same. The urine was negative. The pleural fluid was negative for tuberculosis. X-ray examination on admission showed consolidation in the left lower lobe. Twelve days later there was consolidation in the left lower with effusion.

The temperature on admission was 102° to 103° but varied throughout the stay in hospital from 100° to 103°. The pulse was 110 to 120. She did poorly in the hospital. On September 11, a thoracentesis was done; 400 cc. of clear straw colored fluid was obtained. On November 13, she had a "tight feeling" in the chest. She died suddenly on November 14.

Post-mortem report. The left pleural cavity contains about 500 cc. of clear, straw colored fluid; numerous old fibrous bands are present and soft fibrinous adhesions. The right chest shows old fibrous bands and a small amount of clear fluid. The heart shows no disease. The left lung weighs 528 grams; crepitation is reduced throughout both lobes. The right lung weighs 332 grams; there is a normal amount of air in this lung; a small infarct in the free margin of the lower lobe. The common pulmonary artery is almost completely filled with a thrombus; this thrombus extends into all the main arteries in the left lung and into the arteries supplying the lower lobe of the right lung. There is chronic passive congestion of the liver. No disease of the kidneys or of other abdominal organs. There is a mild degree of atherosclerosis of the thoracic and abdominal aorta. No thrombosis in the vena cava, or in the iliac or femoral veins.

Diagnosis. Thrombosis of the pulmonary artery.

Comment. This is an unusual post-mortem finding. The clinical picture bears some resemblance to pulmonary embolism but the onset is slower. The infection probably came originally from the uterus.

Autopsy—30—1540

The case is that of a woman, 40 years old, who was admitted to hospital on September 27, 1930. She stated that on the evening of September 15 she had cut her left leg just above the ankle on a farm tool. She rubbed it with liniment and applied vaseline. The next day the sore had spread and was considerably discolored. A physician she consulted told her she had blood poisoning and advised her to return to Minneapolis. From a private physician in Minneapolis she received local treatments without improvement.

Examination was essentially negative except that there was a large ulcer on the posterior aspect of the

left leg over the calf. There was blackish discoloration of the margins of the wound and a great deal of necrosis of the tissues. The patient had mild arthritis deformans. A number of râles were heard over the chest, both anteriorly and posteriorly. While in the hospital the wound was treated locally by repeated excisions of its margins, application of Dakin's packs, and other measures, but, in spite of all precautions, the gangrenous ulceration continued to spread. It finally attained a size of 20 cm. in length, 14 cm. wide, and 2.5 cm. deep. Sinus constantly showed the presence of many spirillæ accompanied by fusiform types of bacteria, but there were also numerous forms of streptococcus and staphylococcus present. After the first day the patient's temperature ranged almost constantly between 100° and 103° until the twenty-second day, when it reached normal. The leucocyte count on admission was 4,500. There was a secondary anemia with a hemoglobin of 76 per cent. The leucocyte count then proceeded to drop to 2,800 and 2,300 with relative lymphocytosis. On the twenty-fifth day the patient was apparently doing quite well when seen late in the evening, and amputation of the leg was being considered for the following day. Some time between midnight and three o'clock in the morning her temperature suddenly rose to 105°, numerous râles were heard in the chest, and death supervened.

Post-mortem report. Poorly nourished woman. Pleural, peritoneal, and pericardial cavities normal. The heart weighs 250 grams, cloudy swelling of the myocardium. Terminal bronchopneumonia, both lungs; old healed tuberculosis of the tracheo-bronchial lymph nodes. The spleen weighs 820 grams; marked acute splenitis; culture of the spleen shows *Bacillus pyocyaneus*. The liver weighs 2,550 grams; marked cloudy swelling. Cloudy swelling of the kidneys. Old healed pelvic peritonitis.

Diagnoses. Gangrene of leg following trauma. Sepsis, due to *Bacillus pyocyaneus*.

Comment. A fall of the leucocyte count is an unfavorable sign in a case of sepsis. Various types of bacteria were present in the wound but only *Bacillus pyocyaneus* was found in the spleen.

North and South Dakota State Medical Association will meet in joint session commemorating the 50th annual meeting of organized medicine in Dakota Territory, June 1, 2, 3 and 4, 1931, at Aberdeen, South Dakota.

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WHAT IS WRONG WITH THE SPECIALIST?

Quoting from one of William Osler's last addresses "The Old Humanities and the New Science": "The extraordinary development of modern science may be her undoing. Specialism, now a necessity, has fragmented the specialties themselves in a way that makes the outlook hazardous. The workers lose all sense of proportion in a maze of minutiae. Everywhere men are in small coteries intensely absorbed in subjects of deep interest, but of very limited scope. Chemistry, a century ago an appanage of the Chair of Medicine or even of Divinity, has now a dozen departments, each with its laboratory and literature, sometimes with its own society. Applying themselves *early* to research, young men get into back waters far from the main stream. They quickly lose the sense of proportion, become hypercritical, and the smaller the field, the greater the tendency to megalomania."

For some time there has been a growing suspicion that there is something wrong with the use of the word "specialist," as applied to many of the men designating themselves as such in the various fields of medicine and surgery. Is it not because there is no regular method or training required of men desiring the privilege of holding themselves out to the public as specialists? There is nothing except his conscience to prevent the recent graduate from the day he receives his license to practice medicine and surgery, from hanging up his shingle and announcing himself as a specialist in children, surgery, obstetrics, eye, ear, nose, and throat, genito-urinary diseases, and what not. Group medicine has fostered or developed this condition to a marked degree. It would

seem that the young physician desiring of preparing himself for a specialty should be required, after his years of internship, to practice general medicine for five years in order to get the vast amount of general information he acquired during his college course on a working basis, or get a general realization of the dependency of one part of the body upon another. Then let him spend six months to five years with a specialty in some good center for the teaching of the same. Some of the specialties require longer preparation than others. Now young men spend a few months in a dispensary and come out eye, ear, nose and throat experts. Another fresh graduate takes a two weeks' or a two months' course as offered by several institutions in surgery and becomes a surgeon with a certificate to that effect. The embryo pediatrician follows a specialist in that line for weeks after his internship, gathers up feeding formulæ, looks after a few children, notes their action under various conditions, and imagines he is trained above the general practitioner who has treated and fed children for ten to thirty years and in that time followed the general progress of medicine. These young men become narrow gauged, seeing nothing in medicine but their own field, never recognizing that other organs may be the seat of disease upon which their treatment must be based.

The Western Surgical Society, in 1924, after its President's address by Donald MacRae, passed resolutions condemning the methods employed to develop specialists in surgery, and a committee was appointed to meet with the Regents of the American College of Surgeons and the Committee on Education of the American Medical Association with a view to improving the condition by standardizing surgical courses at various institutions.

Dr. W. A. Fansler, in an article in THE JOURNAL-LANCET of February 15, 1931, calls attention to the absurd method by which a large percentage of so-called proctologists are turned loose upon an unsuspecting public. I think the public,

their professional teaching bodies, and the profession at large should at this time take some active steps to insure safer and better development of their specialists.

This is no criticism of the many qualified and eminent specialists that we have throughout the country, but I venture to say that their background better fitted them to take up the specialty than that of the recent graduate with one year's internship in a hospital. The law requires a greater degree of efficiency on the part of the specialist than it does of the general practitioner. Are we prepared in every instance to meet these demands?

J. P. A.

HEALTH LEGISLATION

Before nearly every legislative assembly, both state and national, are placed bills pertaining to the public health. Many of them are drafted and sponsored by cultists and those who desire to imitate the medical profession.

In the industrial world it has long been known that after years of hard work have been devoted to the development of a good product and large sums of money have been expended in perfecting that product and winning for it a good reputation, parasites, barnacles, and leeches make their appearance. They are not willing to put forth the necessary effort nor do they have the ability even if they were willing to work.

The medical profession, with more than 2,000 years of development, resulting in remarkable clinical and scientific attainments which are in no small part responsible for the increased longevity in the human family, also has its parasites and leeches. Imitators have always preyed upon the medical profession but history reveals the fact that not one has stood the test of time. Each in turn has disappeared like the sparkling snow before the springtime sun.

A few new groups of imitators have prospered during the last decade. They have thrown the public health in jeopardy, but the medical profession has no real need for alarm. The groups of imitators cannot stand the test of time. Not one of them is supported by the great educational institutions of the world. Already more than one is declining and nearly ready to fall.

However, they make lots of noise in legislative halls and in public meetings. They post bills in conspicuous places and do all in their power to shake the confidence of the public in the medical profession. Occasionally they score a victory, but this usually occurs when the medical profession is not awake to the situation. Even though the future of the present cults and imitators is short,

new ones are constantly appearing; therefore, it behooves the medical profession to be wide-awake at all times and ready to defend itself against malicious attacks.

Recently an organization calling itself The Tax-payers and Voters League of the United States distributed a bill board poster in opposition to Governor Shaffer, a friend of the Public Health of North Dakota. This poster will receive the attention it deserves in subsequent issues of the Lancet. Various bills pertaining to health which were presented before legislatures of the Northwest in 1931 will also be considered.

Now is the time for each county, district, and state medical society to effect its organization so as to be ready for the next legislative assembly in its state. It is reasonably certain that one or more bills will be introduced in each state which, if passed, will jeopardize the future health of the people of that state. The medical profession, with its traditions of more than 2,000 years and its high ideals, is the health guardian of the public. It must be organized so as to be ready at all times to fight for that good health which results in greater efficiency, more happiness and longer living of the people.

J. A. M.

DR. ANDERS SODERLIND

Doctor Anders Soderlind, a practicing physician and surgeon of Minneapolis for the past 28 years, died March 22nd at his home, 2016 Seabury Avenue, after a long illness. He was 70 years old.

Dr. Soderlind was born in Sweden and came to the United States at the age of 19. He studied pharmacy and for ten years practiced this profession at Stillwater, Minnesota, and Bismarck, N. D. During this period, he decided to study medicine and in 1890, he was graduated from the University of Minnesota Medical School. This was followed by postgraduate study at Johns Hopkins University and at the medical schools of Berlin and Berne. In 1902, he opened an office for the practice of medicine at Seven Corners, Minneapolis.

He was a founder and trustee of the Swedish Hospital and its chief of staff for many years. He was a member of the Hennepin County Medical Society and the Minnesota Pharmaceutical Association.

Surviving him are his wife, a son, Dr. Ragner Soderlind, a daughter, Mrs. Ellen DeLloyd Barber, a brother and two sisters.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of February 11, 1931.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 11, 1931. After dinner at 7 o'clock, the meeting was called to order by the President, Dr. J. S. GILFILLAN. There were 39 members and 1 visitor present.

In the absence of the Secretary the minutes of the January meeting were read by Dr. CARL DRAKE.

Dr. F. R. WRIGHT (Minneapolis) read the following memorial of the life of Dr. F. A. DUNSMOOR:

FREDERICK A. DUNSMOOR was born May 28, 1853, in Harmony, a small town later called Richfield, and now a part of Minneapolis. He died on December 16, 1930, at his home in Hollywood, California.

In his death American surgery and this Academy have sustained a grievous loss. His scheme in life was to improve his own qualifications and continuously advance the progress of his profession.

He began the vocation of his choice early in life; at the age of 16 he entered the office of Doctors Goodrich and Kimball to study medicine. He acquired his preliminary education in a Minneapolis High School and the University of Minnesota, and pursued his medical education in the Bellevue University and Hospital of New York City. Upon his return to Minneapolis he entered into partnership with Dr. H. H. Kimball, commencing to practice independently in 1877. He was a dominant factor in all of the medical schools which led up to the organization of the Medical Department of our State University.

Dr. DUNSMOOR bought the Winslow House and started the Minnesota Hospital College and served as its Vicepresident and Dean; he was also the Professor of Surgery, and Surgeon to the Dispensary connected with this institution. He aided the Professor of Ophthalmology to establish an Eye, Ear and Nose Clinic which led up to the establishment of the Departments of Ophthalmology and Otolaryngology now existing in our Minnesota State University.

He was one of the founders of the Asbury Hospital and for many years the leading surgeon

on the staff. Following this he became associated with the Swedish Hospital. When the Medical Department of the University was organized in 1888, he was appointed to the chair of Clinical and Operative Surgery which he held until 1913. During the last ten or twelve years of his active career his work was done at St. Barnabas' Hospital. He was one of the pioneer surgeons of Minnesota during the days when native genius and devotion to science were the chief elements that led to success.

In addition to being a constant student, encouraging research, original in thought and technic, a magnetic teacher, and an able clinician, Dr. DUNSMOOR was a gifted writer, publishing his articles on his specialties in the leading medical journals of the country. He was keen in debate. He had a flare for picking out the valuable points in papers to which he listened attentively, thus emphasizing their importance. He did not confine his usefulness to his profession but took a keen interest in civic affairs and the general welfare of the community and thus became an eminent citizen.

Dr. DUNSMOOR took an active part in the meetings that resulted in the formation of this Academy. He nominated its first president. The continuous, growing success of this medical society, which its history demonstrates, was greatly aided by his activities in its proceedings.

Early in life he established the habit of taking a vacation each year, during which he would visit the larger hospitals and scientific centers in this country and abroad. One of his chief characteristics was his ability to do an enormous amount of work apparently without fatigue. He was a wonderfully dexterous operator, as hundreds of his devoted students throughout the country will testify. He was a lover of Nature, spending a great deal of his time in the country and in travel. He loved "the spirit of the lakes and the seas and rivers."

His domestic life was delightfully pleasant as all those who had the privilege of visiting his fine home on Tenth Street in Minneapolis will testify.

In addition to all his virtues was the gift of friendship; fortunate were those who enjoyed it. His wide range of travel and information and

well-stored mind rendered his companionship most enjoyable and profitable.

To his two daughters, Mrs. Homer P. Clark, St. Paul, and Mrs. Frederick W. McCartney, Denver; a brother, Dr. John Dunsmoor, Los Angeles; and three nieces in Minneapolis, Mrs. A. W. Armatage, Mrs. Horace Lowry and Mrs. N. H. Scheldrup, we extend our profound sympathy.

Signed) JOHN F. FULTON, Chairman
EMIL S. GEIST,
FRANKLIN R. WRIGHT,
Committee.

DR. GEORGE N. RUHBERG (St. Paul) read his Thesis, entitled "Paresis and Malaria."

DISCUSSION

DR. W. H. HENGSTLER (St. Paul): I want to express my appreciation of this fine thesis which DR. RUHBERG has presented upon a very pertinent subject. I was very much impressed by the emphasis which he placed on the early diagnosis of syphilis, and I want to concur with him in that. I think if more syphilis of the central nervous system were recognized early we should have less need for the malaria treatment. I should like to call attention to the fact that in certain provinces of China, concerning which I had occasion to read in looking up the literature on this subject, a few years ago, provinces where malaria predominated among the native population, although syphilis is very prevalent there is positively no neurosyphilis known. These observations were made by a man named Nathaniel Berkowitz in certain provinces in China where he had been located.

DR. RUHBERG stated that the relationship of malaria to syphilis is not known. I believe that is true. I believe that the mechanism by which the malaria acts upon the syphilis is as yet unknown, but this Chinese situation would indicate that there is some relationship between the prevalence of malaria and the occurrence of syphilis in the blood stream, but not in the cerebrospinal system. Attention should also be called to examination of the pupils of patients who are suspected to have syphilis. Pupillary fixation to light and accommodation will often give the early diagnosis of cerebrospinal syphilis before any other manifestations are present. The question of the relationship between the clinical symptoms and the serological findings in neurosyphilis, particularly in the patient who has been under treatment, whether or not he is cured, is one of importance. At the meeting of the Central Neuropsychiatric Association which was held in Ann Arbor, Michigan, some three or four years ago, Dr. Camp and his associates presented some of their work in neurosyphilis, and called attention to the fact that the clinical picture was much more important than the serological findings. If a man obtained a remission, the presence of positive serological tests was not regarded as anything to worry about particularly, as long as the clinical picture remained satisfactory, unless, of course, the spinal fluid was becoming more actively positive. DR. RUHBERG stated that cases of paresis for malarial treatment must be carefully selected. In this I also agree with him. One cannot treat paretics with malaria indiscriminately, because so many of them are low in vitality and physically depleted that the malaria treatment would kill them; so a proper selection of

cases for this type of treatment is of the utmost importance, and no patient should be selected who is not physically fit to stand the malaria onslaught. Finally, I believe that it must be conceded by all that the proper place for treatment of paresis with malaria is in an institution. The private practice of neurology, as the ordinary practitioner carries it out, is hardly the place to treat with malaria. In an institution a large number of cases are handled and there the malaria strains can be kept active all of the time and the patients can have the adequate facilities for proper care.

Again I wish to say that DR. RUHBERG's paper was very fine, and that I appreciated hearing it.

DR. F. R. WRIGHT (Minneapolis): When one tries to reason out why malaria affects late cases of syphilis he must review those facts which bring about the cure or control of syphilis. A man infected with syphilis produces in the body certain protein substances called antibodies or immuned bodies, the detection of which is called the Wassermann reaction. We treat the patient with salvarsan, mercury or bismuth, but none of these kill spirochetes. When these drugs are introduced into the body, they stimulate the tissues to produce a toxalbumin, which is a stronger spirocheticide than those protein substances produced by nature. When the tissues of our patient become so accustomed to the presence of arsenic, mercury, and bismuth that they no longer respond and produce a toxin-albumin, which will destroy the spirochetes, we must find some substance to replace them which will produce a toxalbumin capable of destroying these spirochetes. This we find in malaria. The growth of the plasmodium malariae in the body produces a certain protein substance which gives a Wassermann reaction. Whether these protein substances produced by malaria are the same as those produced by the presence of syphilis, we do not know, but they undoubtedly are of a similar nature. Is it not possible that these chemical substances produced by the growth of malaria are able to destroy or control the disease even after those substances produced by the presence of spirochetes, or by the administration of arsenic, mercury, and bismuth have failed?

DR. E. M. HAMMES (St. Paul): DR. RUHBERG's paper is a very timely one. Any paper that calls attention to the early diagnosis of neurosyphilis is timely, for the earlier we recognize and diagnose these cases the less will be the destructive changes and the more favorable the prognosis.

Syphilographers tell us that syphilis in this country is on the decline. Lida J. Usilton, in a study of the prevalence of venereal disease in the United States, estimates that there are approximately 1,500,000 active cases of venereal disease, out of which about 700,000 are active cases of syphilis. To this must be added the large group of cases which are not under treatment, and the still larger group which have positive blood Wassermans and are asymptomatic.

In about 30 per cent of the cases we obtain a history that the patient has had no knowledge of having had a previous syphilitic infection. In neurosyphilis as a group the blood Wassermann is negative in about 50 per cent of the cases. For that reason the early and thorough spinal fluid study is essential in every suspected case and in every organic neurologic case where the diagnosis is in doubt.

The psychoses associated with syphilis of the brain come under two large groups. The one group comprises vascular syphilis associated with the psychosis.

The second group comprises the genuine cases of general paresis. There are many instances in which one is unable to differentiate between the two conditions except that perhaps in the former group the response to antisyphilitic treatment is much more rapid and much more favorable.

We frequently speak of the paretic spinal fluid syndrome, characterized by a moderately high cell count and a 4 plus Wassermann and a typical paretic colloidal gold curve. However, this serological picture does occur in other forms of neurosyphilis. I recall a patient who to my knowledge has had a typical paretic spinal fluid syndrome since 1919, who is perfectly well today except for a dilated pupil and who has never manifested the slightest evidence of paresis.

Malaria undoubtedly is the best recognized treatment for general paresis. It is fraught with a certain amount of danger. According to statistics from the various clinics there is a death rate of approximately 20 per cent directly due to the malarial infection. However, we are dealing with a fatal, degenerative disease and our attitude toward this treatment should be the same as to some of the heroic forms of treatment which the surgeon uses in his cancer problems.

Prior to the introduction of the treatment by malaria we were unable to secure a negative spinal fluid in a case of paresis, in spite of the fact that we gave these patients thorough and prolonged treatment, both intravenous and intraspinal, for a period of months and months. Since we have been using malaria in our treatment of paretics we not only have had a greater percentage and longer remissions, but have obtained negative serological findings in the spinal fluid in a fairly large group. Sometimes these favorable serological findings do not manifest themselves until months or even a year after the discontinuance of the malarial treatment.

Definite contraindications to malaria are, particularly, hypertension, the various forms of nephritis, evidences of myocardial degeneration, and a general devitalized state of the patient. I recall one case of general paresis with a blood pressure of 220/115 in which we gave malaria. With each chill the blood pressure showed a definite drop. After five chills the blood pressure was 85/40 and the patient went into a state of collapse. Quinin was given immediately, intravenously, and various stimulants, and, fortunately, the patient rallied and did not die. The only death we had in our series was in a favorable case from the constitutional standpoint. On the seventh day following the injection of malaria he developed a chill with a temperature of 104°. This temperature did not drop as one usually expects but continued between 103 and 104 degrees. The patient became unconscious and died within three days. We were unable to obtain a postmortem, but in all probability this patient died from the rare complication where the malaria organism forms multiple thrombi in the smaller cerebral blood vessels, and in that way produced a picture of stupor and hyperpyrexia.

DR. F. R. WRIGHT: That is only about 10 per cent of the estimate of venereal disease ten years ago. In 1896 Professor Taylor, of New York, wrote a book on venereal diseases in which he estimated about 5,000,000 people in this country had syphilis, or about 1 person out of every 15.

DR. S. E. SWETZER (Minneapolis): We have had a small series of patients treated with malaria, 60 or

more. We have used it now for about six years and our results have been about the same as the results reported by others. There have been about 30 per cent remissions, that is, placing the patients into occupations or their previous occupations; 35 per cent were benefited and about 35 per cent did not get any benefit. In checking them over, I think the results are in proportion to the degree of deterioration. If we get them early we get better results. There are some things one should do before giving malaria. In the first place the patient should be put into as good condition as possible. I think out of our 60 cases there have been 4 or 5 deaths. First, give them quinin and if they react to quinin do not give them malaria. Then we give them about 8 or 10 chills, but if the patient is not getting along well we interrupt after giving 4 or 5 chills; it is better to interrupt and have a live patient.

Another question is, why do we have paresis? Almost all of it has been somebody's fault. The patient doesn't know, or some doctor has not done his duty by the patient. If these patients are given intensive treatment over a period of three years or more almost none of them will develop paresis, but they often get treatment for a few months or a year and then stop.

Then there is the use of malaria in cases other than paresis, such as Wassermann fast cases and tabetics. In Vienna they are treating all syphilitics that show signs in the spinal fluid with malaria and they think that prevents neurosyphilis. I think this is a big advance in the treatment of syphilis.

DR. HAMMES: Have we any definite means by which we can determine when the syphilitic is cured, aside from again reinfecting him in order to determine whether he develops another chance?

DR. SWETZER: About 97 per cent of them will not develop nervous syphilis if you can give them treatment over at least three years. Almost invariably the patients we get with nervous involvement have had a few months, often not a year, of treatment. But if you give them at least three years of intensive treatment and then check the spinal fluid, I think you will find that neurosyphilis will practically disappear.

DR. C. N. SPRATT (Minneapolis): I would like to ask two questions: first, how do you get these patients with malaria? In 1901, when I was House Officer in Johns Hopkins Hospital, malaria was common; we had a malaria patient in one bed, a typhoid in the next, and a pneumonia in the next; the windows were unscreened, so there was opportunity for getting malaria. Where do you now get the malaria organisms, especially in Minnesota, to give to these patients?

Second, I wonder if anything has been done along this line with foreign protein, or low or high frequency current, and diathermy?

DR. RUHBERG (In closing): I wish to thank the gentlemen for their very kind discussion of my paper. I did not include any of the cases of frank paresis in this paper for the reason that it is practically conceded the world over that malaria at present is the best treatment for paresis and it would be merely a repetition. I included only those cases in which one could not make a clinical diagnosis of paresis, but who are in danger of later developing paresis or tabes. Personally, I feel that a person with negative spinal fluid, who has had syphilis, has a very good chance of not developing a parenchymatous neurosyphilis. I would not be willing

to state that such a person who has a negative spinal fluid will never develop neurosyphilis.

If we are going to do the right thing by our patients it is necessary that we discover the presence of a neurosyphilis early and treat it until all serological signs disappear. In the severe cases, such as described by Moore in his Class 3, or preparetic type, it will be found that malaria is often needed to bring about this result. We have all had experience in treating late cases of paresis, in which the patient may have been saved and a negative spinal fluid finally obtained, but so much parenchymatous destruction had taken place that the treatment merely improved the patient to the level of a high grade imbecile, or placed him in the feeble-minded class, and as a result caused great distress to the family in handling and taking care of him. In these cases the treatment certainly could not be classed as successful, and in many cases it would have been better not to have given malaria at all.

In answer to DR. SPRATT'S question, we draw 10 cc. of blood from the vein, and treat it with citrate to prevent coagulation, and then keep it warm until we are ready to reinoculate. 4 cc. of this citrated blood is given intravenously, and as a rule will begin to cause a rise in temperature in 7 to 10 days. I purposely did not mention typhoid in the treatment of paresis, but included that in the reasonable treatment that could be given before malaria. There is no question but that typhoid is safer and is very valuable. Some claim that it is as good as malaria. However, it has not had the world-wide recognition that malaria has in obtaining the lasting and satisfactory remissions. Fever may be the major factor in the treatment by malaria, and diathermy is being used in an experimental way, and the few reports are enthusiastic.

DR. HAMMES' estimate that 20 per cent of these patients die of malaria is rather high I believe. The usual statistics I have read give the mortality as around 10 per cent, and it must be remembered that these cases include frank clinical cases of paresis that have already deteriorated to a more or less extent, and are for the most part confined to the asylums. In well selected preparetic or asymptomatic cases showing the parietic formula, I believe malaria would show a very marked decrease in mortality. For those cases in which malaria is objected to on account of high blood pressure, vascular conditions, kidney trouble, etc., typhoid vaccine would be a better choice of treatment.

DR. A. N. COLLINS (Duluth) reported the following case:

The case I wish to present is rare in my experience.

This man first came under the observation of DR. S. H. BOYER who referred the patient to me for surgical treatment. The man was 40 years of age and of Swedish descent. He complained of

1. Loss of appetite.
2. Pain in the pit of the stomach, at first right after taking food, and later constant.
3. Vomiting, which he stated came with the pain or soon after the pain started.
4. Loss of weight, about 15 pounds.
5. Weakness.

The stomach chemistry (33 cc.) contained a small amount of mucus and much undigested material; free HCl—O; total acid 8.20. At the second examination it was about the same. On January 22, 18 hours after taking food, only about 5 cc. were recovered, which consisted of gelatinous food particles. His weight on January 16 was 116 pounds; on January 21 was 121 pounds. X-ray examination showed 6 hour residue and 20 hours afterward there was still some barium in the stomach; the bulk of the meal was in the large intestine and the tail of the meal in the transverse colon.

The condition was regarded as early cancerous obstruction of the pylorus and was referred to me for exploration. A note was made by the clinician that early cancer of the pylorus was probable.

On exploration I found a tumor which was not nodular. I called the attention of my assistant to the fact that one could press the finger down into what appeared to be a depression. It seemed that instead of cancer we had a deep indurated ulcer. There were several glands near the pylorus which were round and not nodular or hard. There was no nodular involvement of the liver. There was a shower of stippling over the pyloric area. I did a resection by the posterior Polya method. The pathologist reported that there was an abscess in the wall. This specimen shows a cavity which is a submucous abscess; it contained about one half dram of pus. (Specimen shown.)

DISCUSSION

DR. ARNOLD SCHWYZER: This is an unusual case. I have never seen one in my own work, but in the literature up to a few years ago I know there were over two hundred cases on record. The abscess is between the submucosa and the muscularis and may go somewhat into the layers of the muscular coat. Most of the cases, however, which I have in my memory were treated by drainage and walling off. That a resection could be done in DR. COLLIN'S case was quite a fortunate thing. There were a good number of deaths after draining operations. Resection, when it can be done cleanly, in other words, when the process is not too far spread, is surely preferable.

DR. A. E. BENJAMIN (Minneapolis): I would like to ask DR. COLLINS if microscopic examination were made to see if a diverticulum was present. It is possible to have a diverticulum from the stomach and then an infection and abscess, the opening having closed up.

DR. COLLINS: There was no malignancy and it does not penetrate the wall exteriorly. There was only a slight suggestion of a peptic ulcer of the mucosa about $\frac{1}{8}$ of an inch in diameter which is not open at the present time. It is possible that there was a small peptic ulcer as the original cause, and that it healed over superficially.

DR. ARNOLD SCHWYZER: I think in the literature

hardly any case is known to have been due to a diverticulum. It was always thought that the condition was due to either a hematogenous infection or perhaps in some cases to a small puncturing trauma.

DR. ARNOLD SCHWYZER (St. Paul) reported the following case:

About a month ago I was asked to see a case with another surgeon, a large tumor of the abdomen which had the contours and relations to the cervix of a fibroid. The patient was a young woman 22 years of age. She claimed she had menstruated regularly and that the tumor would at times be very large and then again would practically disappear. When I examined her this tumor reached to the middle between the symphysis and filled the upper part of the pelvis tightly. The cervix was hard and virginal. The supravaginal portion of the cervix ran far backward and upward. From the cervix one could feel a gradual and unbroken transition into the tumor. This was felt as well on both sides as in front. But the tumor fluctuated, perhaps somewhat tensely, but definitely. Could it be perhaps a cystic tumor of the ovary which was plastered onto the corpus uteri by some inflammatory process? There was no trace of pain. Could it be a cystic tumor of the corpus uteri, a cystic degeneration of a fibroid? A hydro- or hematometra was excluded by the regular menstruation which was not to be questioned.

I was absent when the operation was performed, but the two surgeons who operated found a very perplexing and disquieting condition which appeared to be pregnancy. The tumor was the uterus; it was soft and fluctuating, of a bluish hue, and the adnexa started off symmetrically on either side. When a carefully inserted needle yielded clear fluid, the diagnosis seemed to be definitely forbidding an aggressive procedure and the abdomen was closed. "Primum non nocere" is a valuable principle. No particular harm was done and no bridges were burnt. But a lingering doubt had remained in the surgeon's mind, I am sure. For when on my return I definitely rejected the diagnosis of pregnancy, he readily assented to the proposition to reoperate and to enucleate the tumor which must be a hydropically degenerated fibroid. While the uterus was the size of the five months' pregnancy, the external genitalia were entirely normal, the cervix small, hard and virginal. The change in size of the tumor was so far unexplainable. Was it an error of observation on the part of the patient? Inquiry in the laboratory as to the amount of albumen found in the withdrawn fluid showed that a large amount of albumen had been noticed. Amniotic fluid

contains only an insignificant trace, hardly any. Thus the diagnosis "hydropic degeneration of a fibroid" was confirmed.

This morning we reoperated. The tumor was about the size it had been judged to be at my first examination, but both surgeons who had performed the first operation at once declared that at the first operation the tumor had reached much farther up. It was plainly fluctuating. The color was normal for a fibroid uterus; there was no bluish hue. We shall try to explain this difference later. The adnexa left the uterus on each side at the same level, but this level was too low for a pregnant uterus. The tubes emerged at the junction of lower and middle thirds, and abnormally far in front. The fibroid was therefore in the upper posterior wall of the uterus, though the whole was apparently a uniformly enlarged womb. In this area also the fluctuation was the most outspoken. All this became only definitely clear after the mass had been delivered from the pelvis, which was, however, not a simple matter. The tumor was partly in the pelvis and filled it so completely that it was impossible to insert the fingers far enough into the pelvis to bring the tumor up. With the help of probangs on both adnexa it was gradually worked out of the small pelvis. The fluctuation made us avoid toothed Museux forceps or a corkscrew tractor. After bringing the uterus into the wound a transverse incision was made over the upper posterior surface and the fibroid was shelled out. Twice during this process the finger slipped into a cavity and clear fluid escaped. After the enucleation was completed the mass was still about the size of a grapefruit. It was a practically necrotic and very hydropic intramural fibroid with large irregular cavities of disintegration. From the torn area the inner parts of the tumor bulged out as a flabby, white, bloodless, and exceedingly soft material.

What had puzzled the surgeons before was the fact that the tumor, according to the definite statement of the patient, had become very large and prominent and then again had practically disappeared. On the two occasions when I had seen her, the tumor was about the same size. At the operation this morning it struck me that possibly or rather very probably this difference was to be explained by a change of the position of the mass. When the bladder and the ampulla recti were perhaps abnormally full, the tumor was forced up into the large pelvis and on account of its size would stay there. It then bulged greatly. When these viscera were empty the

abdominal pressure could sometimes, under favorable conditions, push it back into the small pelvis and thus the tumor seemed to have disappeared almost completely. The snugness with which it fitted into the pelvic rim made this explanation probable. The fibroid fitted like a cork in a bottle. This snugness in fitting into the pelvic rim seems to me also to explain possibly the difference (as emphatically stated) in the appearance of the color of the uterus at the two operations, inasmuch as perhaps the marked stretching of the uterine vessels when the tumor was high in the abdomen would cause some degree of cyanosis.

The drawback of having to undergo two operations was compensated by having the pelvic organs preserved intact. Not removing any of the exuberant musculature of the tumor bed and broadly uniting the surface with four layers of continuous suture left a somewhat unsightly shape for the uterus, but gave us good assurance against rupture in a possible future pregnancy. Furthermore, this deformity due to the bulky capsule of the tumor will in all probability correct itself gradually, and at any rate has no importance. The uterine cavity had not been entered.

DISCUSSION

DR. W. H. CONDIT (Minneapolis): The history of DR. SCHWYZER's report of a patient is of unusual interest to me because it almost parallels a patient I operated upon at the University Hospital several years ago, the exception being that this patient's tumor was the size of a full term pregnancy.

It was at the time when Dr. Beebe was with us, and he happened to be in the operating room at the time. After opening the abdomen and exposing the tumor, his remark was, "Young man I have seen better men than you obliged to leave the state for taking out a uterus like that." The serosa was bluish and injected. There was fluid underneath, and it was a picture of a full term pregnant uterus. On palpation one could almost feel elbows, knees and even the head.

I ruled out pregnancy practically the same way DR. SCHWYZER made his diagnosis in his case, that is by palpating the cervix from the abdominal cavity, finding a firm, hard, contracted cervix, a condition impossible in pregnancy, especially at full term.

The tumor was removed. On opening, a large amount of fluid was evacuated out of a thin walled cavity. On further incision of the tumor, another cavity with fluid was found. In the wall of this cavity were several hard myomata, which were the "elbows" and "knees" supposedly felt. On further resection, a large, hard myoma the size of an infant's head was found.

This patient was much older than DR. SCHWYZER's patient, one point which assisted in ruling out pregnancy, although she was not absolutely beyond the age of conception.

DR. C. B. WRIGHT (Minneapolis) reported the following case of undulant fever:

The patient was a male, aged 47, single. His

mother was living and well; father died of Bright's disease; and one brother and one sister were living and well. He has been in the dairy business since he was a boy, except from 1912 to 1919 when he was in the elevator business.

He had always been a fleshy man. In 1908 he first had rheumatic fever and then had it every year for five years. The attacks lasted about five weeks. Temperature would go up to 103°. He would be lame and could not walk for a long time after attacks and his feet pained a great deal. In 1920 he had an attack of severe pain in his back and right side which the doctor said was due to liver trouble.

He was first seen early in 1927. He was having a lot of dull aching pain in his left ear, took cold easily, and had a raw throat and used to have a lot of phlegm back of his tongue. He stated that he had never had pneumonia nor pleurisy nor typhoid. He complained of more or less indefinite trouble with his stomach; vomited easily in the presence of bad odors or if he saw something unpleasant. The most he ever weighed was 245 pounds, and his weight varied from 220 to 200 for the last four or five years. The last four years he had a tendency to drowsiness and could go to sleep anywhere. He said he was a small eater, but ate everything. His blood pressure had varied from 143/75 to 110/70. He chewed tobacco and smoked, but used no liquor.

On examination the patient was found to be rather fleshy, with a pendulous abdomen. The reflexes were normal; no tremor, no eye signs. The throat and teeth were normal. The neck was large, with slight enlargement of the thyroid. Lungs and heart were normal. Liver and spleen were not palpable. The rectal examination was negative.

On July 5, 1927, he came back, having an attack of pain in the right side under his ribs; also some pain on the left side. He was dizzy, feverish and nauseated. He had never been jaundiced, and had no diarrhea. He was tender over the gall bladder area but there was no tenderness over the back. The upper right rectus muscle was somewhat rigid. This attack lasted only a short time. He also complained of numbness in his fingers and said that at times his feet had swelled.

On July 27, 1930, he was seen by Dr. Adam Smith during my absence from the city, when he complained of severe pain in the left hip radiating almost to the knee. Dr. Smith felt it was neuritis. He also complained of back pains.

On February 6, 1931, he came in again com-

plaining of general bad feelings, no pep, drowsiness, stating that he thought he had been feverish for some time. In fact, he had been taking his temperature for two or three weeks and found he had some fever every day. On examination his temperature was found to be 101° . The throat was not inflamed and there was no evidence of a cold. The lungs and heart were negative. There was no rash, no glandular enlargement, and no edema. Abdominal examination was negative. The blood Wassermann was negative.

There being no obvious reason for the fever, I had some blood sent to the University and the report came back positive agglutination in a dilution of 1:320 for bacillus abortus. Typhoid and paratyphoid were negative.

He came back on February 10, 1931. His temperature was 100.4° about 4 p. m. Blood count: Hb. 86 per cent; r. b. c. 4, 140,000; w. b. c. 8,050. Differential: polys. 44 per cent, lympho. 53 per cent, monocytes 1 per cent, basophiles 2 per cent, sosin. 0.

On going back over his records, he says that in 1900 he took care of a herd of 50 cows and that about one third of the herd aborted. In 1901 they raised only three calves from the fifty. During the last four years there has been abortions every year in his herd. Last winter there were two abortions in five cows. The herd was tested for tuberculosis but not for undulant fever. He thinks he has had the infection for at least four years, and has had the same trouble at intervals since he was a boy. He also claims that the man working with him on the farm complains of the same symptoms. Because of the continuous contact with cows, it is difficult to say how long this disease has been present. Another interesting feature of this case is the history of

attacks of inflammation which suggests gall bladder disease.

Dr. Reuben Johnson recently reported at the Abbott Hospital staff meeting, a case where no agglutination was found but the organism was isolated from the urine and definitely proven to be *B. abortus*. He also reported that Dr. Amoss, of Duke University, who had a case of undulant fever with gall bladder trouble, operated and found the bacillus in the gall bladder. The organism has also been isolated in stools. Cases have been reported where agglutination never was present and the only way to make a definite diagnosis was by isolation from the stools or urine. In "Oxford Medicine" there is a very excellent account of this disease with a bibliography down to July, 1930.

DISCUSSION

DR. HAMMES: What is the treatment of this condition?

DR. COLLINS: I would like to ask two questions: first, how does this organism affect experimental animals; and, second, what is the mode of transmission, in the secretions, food, or what?

DR. WRIGHT: There apparently is no particular treatment for this mild type of infection. Gradually it burns itself out in varying lengths of time. The length of time an individual may harbor this infection is not definitely known. Cases have been reported lasting as long as four years.

In reply to DR. COLLINS, if this organism is injected it produces a bacteremia. This undoubtedly also happens if animals are fed infected material. The mode of transmission in animals is generally thought to be through swallowing infected material. It may be directly transmitted from one animal to another through the blood stream. This, of course, does not happen to any extent. Workers in slaughter houses have been directly infected through abrasions. The mode of infection in this part of the country, in human beings, is considered to be by mouth and largely through the drinking of milk.

The meeting adjourned.

R. T. LA VAKE, M. D., Secretary.

PROCEEDINGS MINNEAPOLIS CLINICAL CLUB

Meeting of January 8, 1931

The regular monthly meeting of the Minneapolis Clinical Club was held in the lounge of the Hennepin County Medical Society on Thursday evening, January 8, 1931. The meeting was called to order at 7 o'clock by the President, DR. MOSES BARRON. There were 25 members and 1 visitor present.

Minutes of the December meeting were read and approved.

The President called the attention of the members to the new magazine rack in the Library

that the subcutaneous nodules came about two months previous to the time of examination.

A diagnosis of malignant intraocular melanoma was made, and enucleation done. A biopsy also was made from one of the subcutaneous tumors. Room which had been presented by the Clinical Club to the Hennepin County Medical Society.

The scientific program was as follows:

DR. WALTER E. CAMP reported two cases of melanotic tumors of the eye.

I wish to present two cases of intraocular

malignant melanomata in which rather complete pathological examinations were made.

(a) The first case is that of a married woman, aged 54 years, who came for examination because of intermittent redness and pain in her right eye which had been blind for some years. There was no history of injury or serious illness. Examination showed conjunctival and ciliary injection; the anterior chamber was completely obliterated; the iris was atrophic and pushed forward against the cornea; the pupil was eccentric, irregular and fixed; the lens was cataractous, preventing examination of the fundus, the eyeball was stony hard, and tension with the tonometer was 60 mm. Hg. as compared to 20 mm. Hg. in the left eye; there was no light perception present; transillumination of the globe showed the outer half to be opaque.

The general physical examination showed numerous small, hard, bluish, subcutaneous tumors on the scalp, chest, abdomen, axillæ and groins. The liver was not enlarged. There was no weight loss, and no cough. The patient stated

The eyeball on section showed a large melanotic tumor involving about three-fourths of the choroid and extending into the ciliary body. Perforation through the sclera had occurred at the equator along the vortex veins. Parts of the tumor were deeply pigmented; others necrotic and showing cholesterol crystals.

There was no local recurrence of the tumor after enucleation, but the metastatic tumors increased in size and the liver became enlarged. Death occurred fifteen months after enucleation. Autopsy showed generalized melanomatosis of all organs and visceral surfaces.

(b) The second case is one that I saw some years ago with Dr. Murray at the University Hospital. The patient was a young farmer nineteen years old who came complaining of loss of vision in the left eye. His parents noticed a change of color in the iris of this eye almost two years before coming to the hospital.

Examination showed a mild conjunctival and ciliary injection. The pupil was dilated, the anterior chamber shallow. The iris showed areas of deep pigmentation scattered from the periphery to the pupillary margin. These areas were not raised above the surface. The lens was clear. The fundus showed glaucomatous cupping of the optic disc and optic atrophy.

Enucleation was done and the whole eyeball sectioned serially. Microscopically the entire circumference of the iris was found to be infiltrated with a diffusely pigmented tumor. Graphic reconstruction showed the tumor as outlined in the

slide. (Slide shown.) The tumor was composed of round and spindle cells, many of which were deeply pigmented. The tumor cells were most numerous at the periphery of the iris, and extended into the ciliary body and onto the posterior surface of the cornea. Some of the tumor cells were found extending out along the anterior ciliary veins. Aside from the glaucomatous cupping of the disc and optic nerve atrophy, the remainder of the eyeball was normal.

Annular malignant melanoma of the iris or ciliary body is exceedingly rare. They are slow growing and may give late visceral metastases similar to choroidal melanomata.

DISCUSSION

DR. ERLING HANSEN: These two cases are certainly very interesting and demonstrate, at least to some extent, the difficulty one finds in making a diagnosis. In the first case if it had not been for the fact that metastases were found throughout the skin in places where nodules could be taken out and sectioned, the diagnosis would have been rather difficult. The fact that the lens in many of these becomes sclerosed and cataractous makes it difficult or impossible to see the fundus so that the presence of tumors cannot be diagnosed.

In the old division into stages of development of tumors, particularly tumors of the chroid of which we have the greater number in the sarcomatous group, the first stage, the quiescent development of the tumor, was missed as the patient is seldom seen in this stage. Most patients come to the oculist because of some disturbance of vision or because of pain, and unless the tumor is in the macular area there is very little early disturbance of vision. Then the tension in the eyeball increases and brings on the second stage, in which probably most of the patients are seen. The third stage is the breaking down of the tumor; the fourth stage the invasion of other tissues.

Unfortunately, one of the sad things about these tumors is that they metastasize very early, especially into the liver, and even though the eye is enucleated at a very early stage, the metastasis has already taken place.

Another thing causing difficulty in diagnosis is extensive detachment of the retina. The evidence of a solid tumor behind the retina is suspected, and it can often be demonstrated in the anterior half of the eye by transillumination through the sclera. If the tumor mass is situated more posteriorly we have more difficulty.

I was particularly glad to see the reconstructed section of this annular tumor, which is rather a rare condition.

DR. KENNETH PHELPS: There is only one thing I might add, and that is in my experience I have known of only one patient who had his eye enucleated for a melanoma and did not have a metastasis. The operation was done about 30 years ago and the patient still lives. He is Dr. Baetjer, the roentgenologist at Johns Hopkins Hospital.

DR. MOSES BARRON: I would like to ask DR. CAMP why the eye was enucleated in the first case after there were obvious metastases throughout the body?

DR. CAMP: That was done for the relief of pain and also to confirm the diagnosis. I might add that the last case, the one I saw with Dr. Murray, was reported in full by him in the *American Journal of Ophthalmology*.

DR. J. S. McCARTNEY: The whole subject of melanoma is a very interesting field in tumor diagnosis because of the great variety of histologic pictures one may see in connection with these tumors, whether they are in the eye, or skin, or intestinal tract. One can get almost any sort of a microscopic appearance, and if one reviews a series of these he sees why there is so much disagreement in the naming of a melanoma; why one person wants to call them melanosarcoma and another melanocarcinoma. You may see everything from a spindle cell to round cell, or alveolar sarcoma, and even to things that you want to call carcinoma. Occasionally you see one which you want to call giant cell sarcoma. I saw such a one not very long ago which was in the small intestine as a primary tumor about 10 or 12 inches from the ileocecal valve. It was 10 by 2 and ulcerated but not an annular tumor, and, in spite of its size, did not produce obstruction. The patient was operated upon for appendicitis, which she had.

Several years ago a patient came to the University Hospital with an enlarged liver. There were several diagnoses made in the Hospital and when she died the enlarged liver was found to be the site of metastatic melanoma. Then they got to looking around and found that she had had an eye removed. In looking up her history it was found that she had been in the hospital about five years before when the eye was removed for malignant melanoma.

Another case I recall, which was reported by DR. MORRISON, was that of a patient at the General Hospital considered as some functional neurosis. It was found that she had a melanoma in the brain and another in the small intestine and they could not determine which was the primary tumor.

DR. BARRON: The case which DR. McCARTNEY mentions was very interesting. I remember it very well because I was house officer at the Hospital at that time. A number of different diagnoses were made in the case. At autopsy an enormous liver was found containing large black tumors. It was then decided to look up the original record of the enucleated eye which had been removed by Dr. Todd about six years before. This was found to contain melanosarcoma.

DR. H. L. ULRICH: They have learned a lesson over at the Hospital now. They have had one similar case since in which the condition was diagnosed.

DR. T. A. PEPPARD read a case report on "Differential Diagnosis: Hemoptysis with Gradual Development of Pulmonary Lesions."

The patient was a female, aged 41, office worker, who was first seen in September, 1930. Her complaints at that time related entirely to the gastrointestinal tract. She stated that she had had a "summer cold" for three months during the past summer, expectorating some mucous material in the morning. She had never expectorated any blood. She became slightly dyspneic when excited. She complained of some transient pains over the anterior chest.

Her family history is quite unimportant. There was no exposure to tuberculosis at any time. She stated she had had tonsillitis and had been observed by a rhinologist who had suspected the possibility of some sinus trouble.

The patient was well-developed, and moderate-

ly well-nourished, although thirteen pounds under her best previous weight. Pulse rate was between 80 and 90; temperature between 99° and 100°. There were some crowned and filled teeth noted, although her dentist reported that all the teeth were vital. The tonsils were not greatly enlarged, but, because of the previous history of tonsillitis and also because of the presence of a number of slightly enlarged cervical lymph nodes, I considered that the tonsils might be a focus of infection. The thyroid was normal in size, the heart quite normal, blood pressure 110/80. There were no physical signs indicative of lung disease. There was no enlargement of any of the abdominal organs, although the patient was diffusely tender to palpation over the abdomen. No pelvic disease or abnormality was found.

On examination the blood, urine, stools, and stomach contents were quite normal. Roentgen examination of the gastrointestinal tract showed no evidence of any organic disease. The skin tuberculin test was definitely positive, but stereoscopic plates of the chest showed only calcified lymph nodes at the left hilum. There was no evidence of tuberculosis or other parenchymal pathology.

On November 13, without other symptoms, the patient expectorated about one tablespoonful of blood, and from that time until the present (January 8, 1931), she has raised material containing some amount of blood almost daily. Since then numerous specimens of sputum have been examined. These all have been small in amount, the twenty-four hour quantity not being over 30 c.c. at any time. The sputum has consisted of grayish, greenish, purulent material, mixed with red blood in streaks, and with some clots. No tubercle bacilli have been found at any time, but there have been many other organisms, staphylococci, diplococci, and streptococci. There was no characteristic odor to the sputum.

Physical examination November 20 showed a slight impairment of resonance over the lower half of the left chest posteriorly, with a slight change in breath tones, they being bronchovesicular in character. Stereoscopic X-ray films were made on this date. Calcified glands in the region of the left hilum were again shown as before. There was no evidence of parenchymal pathology in the upper portions of either lung. There was slight circumscribed density in the lower left lobe.

For a month's time the patient continued to have sputum with blood, as mentioned before, but for the past three weeks the purulent character has disappeared. The physical signs in the lower left chest have cleared up. The patient has gained

nine pounds in weight, and feels quite well.

The X-ray examination of the chest was repeated January 3, 1931, and these plates show now a definite resolution of the localized infiltration, previously shown. In the opinion of the roentgenologist there is no evidence of tuberculosis.

I do not believe that this patient has pulmonary tuberculosis. There is no evidence at this time that she has a primary new growth of the lung. I have chiefly thought of the condition as being one of the nonspecific pulmonary infections similar to those described under various titles by Reisman, Miller, Hamman, and Wolman. I have had several cases similar to this, but I do not recall any in which there has been hemoptysis, although some of these other observers have recorded this symptom. They are most often associated with, or dependent upon, chronic infections of the upper air passages, particularly the sinuses and tonsils, and in the present case I have advised that the patient have a tonsillectomy.

DISCUSSION

DR. F. W. WITTICH: I would like to ask Dr. Peppard more in detail about the sputum. Aside from the X-ray, which is sometimes misleading in these basal lesions, the positive cutaneous test could be followed up with the subcutaneous test, starting with one-half mg. of tuberculin, to see how much of a constitutional reaction resulted, and if allergic to comparatively small doses. Then I think a 24 hour specimen of the sputum would have given us leading information. Pottenger has long ago pointed out the sediment volume determination and albumin content of the sputum as being valuable in differentiating pulmonary tuberculosis from simple catarrhal and nontuberculous abscess.

DR. PEPARD: All of the specimens that I received had blood in them. The quantity was not large at any time. I should estimate that probably she did not raise at any time over a tablespoonful in 24 hours.

DR. WITTICH: Even so, I think that searching carefully for elastic fibers might give us some information. In their absence, of course, I would feel there was less chance of pulmonary suppuration. The fact that the apices are entirely clear and that the lesion is basal is evidence against a tuberculous lesion, although there is some evidence of childhood tuberculosis on the left side as shown by the calcified hilus nodule. I think perhaps one would consider malignancy until he had seen the X-ray. It certainly is a favorite site for primary carcinoma, but the shadow does not have that appearance and the patient is gaining in weight. Then there is a group of cases that we are seeing right now with ordinary colds, with infected tonsils, sinuses, or some other focus of infection, where there is a patch of lower lobe consolidation with or without bloody sputum. There are at times small areas over which a shower of very fine crepitant râles are heard that may persist for weeks. Occasionally there develops in these areas of unresolved bronchopneumonia a small abscess which clears up in six to eight weeks, showing no more of a shadow than this and subsequently clearing up entirely.

The evidence presented, I think, points toward a small

abscess which is resolving and one arising from some other source. I would diagnose this case of DR. PEPARD as nontuberculous, inflammatory in character, resulting in a small pulmonary suppuration, probably metastatic; and if it does not clear up in a reasonable length of time one might suspect malignancy.

DR. H. L. ULRICH: I think Dr. Wittich has covered the field very well. I might suggest a localized bronchiectasis, but that is the only thing which I could add to this discussion.

DR. R. G. ALLISON: I have not seen these plates before, and do not think there is much difference in the three; if so, the one of November possibly shows a little more of the inflammatory condition. Clinically it might be a bronchopneumonia, but from the history I think she has a small abscess there. Certainly there is nothing to suggest a primary new growth. It would be unusual for it to be tuberculosis. I think one can rule out bronchiectasis, tuberculosis and tumor.

I think most likely it is a metastatic abscess which may flare up again but which in the end will probably undergo complete resolution.

DR. J. C. MICHAEL gave a lantern slide talk on "Schematic Orientation for Pathogenesis, Localization and Classification in Neuro-Psychiatry."

DISCUSSION

DR. H. B. HANNAH: As far as the classification is concerned, this was very well done by DR. MICHAEL. There is one thing I might add and that is I am always hoping the time will come when we shall know more about the physiology involved in this question and not so much about descriptive psychiatry.

The meeting adjourned.

H. BRIGHT DORNBLASER, M.D., Secretary.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. M. W. Larson, formerly practicing at Canton, has moved to Hudson, S. D.

The Minnesota State Legislature has refused to give legal recognition to naturopathy as a healing art.

Dr. and Mrs. J. E. Power, Duluth, are spending several weeks traveling in the southern cities by auto.

Dr. Fred L. Mitchell, Newell, S. D., is now located at Orient, S. D., where he will continue general practice.

Dr. Rolfe Taintor, Fargo, is spending a few weeks in Florida, seeking rest and a deserved vacation from his practice.

Dr. and Mrs. A. E. DeTuncq, Milbank, S. D., have returned home after spending several weeks vacationing in southern cities.

Dr. and Mrs. B. A. Bobb have returned to their home at Mitchell, S. D., after spending several months in California.

Dr. N. McL. Leitch, Warroad, Minn., has sold his practice to Dr. O. E. Sarff, and will be located in Chicago in general practice.

Dr. R. E. Cuffe, one of the pioneer physicians of Olga, N. D., is taking a six months' vacation by visiting many of the European cities.

Dr. Paul B. Burton, Fargo, will be in Boston, during the months of April and May, where he will be engaged in special research work.

Dr. M. C. Tank has purchased the practice of the late Dr. B. T. Green, Brookings, S. D., and has opened new offices for general practice.

Dr. Walter R. Ramsey, head of the Children's Hospital, St. Paul, has been elected a director of the Minnesota Association of Crippled Children.

Dr. F. E. Wolfe, formerly located at Britton, S. D., has moved to Oaks, N. D., and will be associated with Dr. G. T. Murphy in general practice.

Dr. R. F. Erickson, Minneapolis, has been spending several weeks in New York City, taking a post graduate course in diseases of woman and obstetrics.

Dr. Harrold Rees, has moved from Cambridge, Minn., to New London, Minn., and opened offices for general practice. Dr. Rees is a graduate of Rush Medical College, Chicago.

The new \$250,000 Sacred Heart Hospital at Havre, Mont., was formally dedicated last month. The building is strictly fireproof and every modern convenience has been installed.

Dr. H. M. Champney, who has been in active practice at Belle Fourche, S. D., for over 40 years, is seriously ill at his home in that city and little hopes are given for his recovery.

Dr. M. E. Winthrow, International Falls, Minn., entertained the local medical society at his residence last month. Dr. J. A. Thabes, Brainerd, was a guest of the evening.

Dr. H. E. Kellogg, Brookings, S. D., was numbered among the first physicians to respond to the call of the 160 persons afflicted with food poisoning a result of eating bad sandwiches.

Dr. Karl W. Anderson, of the University of Minnesota Medical School was the principal speaker at the March meeting of the members of the Washington, Minn., County Medical Society.

Dr. W. A. Allen, Rochester, Minn., who recently celebrated his 97th birthday, says four hours sleep in 24 is enough for any man espe-

cially one engaged in business or professional pursuits.

Supt. Chas. E. Remmy of the General Hospital, Minneapolis, is planning many alterations and improvements for the Hospital this spring. The new space will take care of 50 additional patients.

The Huron, S. D., District Medical Society held its monthly meeting at Huron, S. D. Dr. H. D. Sewell, presented a paper on "The Sioux Valley Medical Meeting," and Dr. J. S. Tschetter, on "Fear and Hope."

Dr. J. P. O'Connor, widely known St. Paul physician, died last month at the age of 62 years. He was a graduate of the University of Minnesota Medical School and had always taken an active interest in the county and state societies.

Dr. Anders Soderlind, Minneapolis, one of the founders and for many years chief of staff of Swedish Hospital, died on March 23rd at the age of 70 years. Dr. Soderlind was a graduate of the University of Minnesota Medical School in 1890.

Dr. F. C. Bowman, Duluth, has a most remarkable record, as he has been in active practice in that city for over 50 years. Dr. Bowman is now 82 years of age, but has no thoughts of retiring from active practice for many years to come.

Dr. S. Marx White, Minneapolis, president-elect of the American College of Physicians, was the principal speaker at the luncheon meeting of the Optimist club, Minneapolis. Dr. White's topic was "Mechanical Equipment as Used in Modern Practice."

The regular monthly meeting of the Northwestern District Medical Society, held at Minot last month, was largely attended and interesting papers were presented by Drs. A. L. Cameron and A. D. McCannel. Dr. J. W. Moreland, Carpio, was elected a member of the society.

The Swift County hospital at Benson, Minn., the only public hospital in that county, had its most successful year in 1930, the annual report shows during the year more than 500 patients were admitted, the largest number cared for in any year since the hospital was opened 19 years ago.

The Sioux Falls, S. D., District Medical Society opened its monthly meeting last month at the Carpenter Hotel with a dinner served at 6:30 o'clock, and followed by a speaking program with Dr. O. Charles Erickson, Dr. C. M. Forsberg and Dr. Anton Hyden talking on subjects related to the medical profession.

The Richland County, N. D., Medical Society held a very interesting meeting last month at Breckinridge, Minn., with Dr. S. R. Maxeiner, Minneapolis, presenting a paper on "The Use of Local Anesthesia in Minor and Major Surgery," followed by a talk by Dr. S. M. White, Minneapolis, on "Some Problems in the Treatment of Fractures."

A suit charging Dr. A. D. McCannel, Minot physician, with malpractice and seeking damages for alleged permanent disfigurement, filed by Earl Rasmussen of Surrey, was dismissed suddenly in district court after a jury had been selected and one witness heard. The suit was dismissed by plaintiff's attorney who told the court that he had been misinformed as to the merits of the case by his client.

The Minnesota Pathological Society held their regular monthly meeting on Tuesday evening, March 17, with the following program: Causes of death in infants and children under 11 years of age, Dr. E. T. Bell; Pemphigoid intrauterine vaccinia (A-25-18), Dr. H. E. Michelson; The importance of hepatomegaly and splenomegaly for differential diagnosis, Drs. A. B. Litman and Moses Barron.

The Minnesota Hospital Association and the Minnesota State Tuberculosis Association will hold a joint convention at Duluth, June 22, 23 and 24. More than 200 hospital superintendents and officials are expected to attend the conference. Dr. Paul Fesler of the University of Minnesota Hospital, president of the Minnesota Hospital Association, will head a delegation from that group. The Tuberculosis Association delegates will be headed by Dr. F. S. Broker of the Battle Lake Sanatorium, Otter Tail County. Well known hospital administration experts will speak.

Medical practice in early days and the difficulties which beset the doctor in fighting disease, were discussed recently by Dr. J. W. Andrews, Mankato, Minn. Dr. Andrews, himself one of Minnesota's early day physicians, told of medical progress and development since pioneer days. He cited diseases which formerly were thought fatal and are now of minor concern because of new treatments and serums discovered. Aside from handicaps in the way of treatment, the early day doctor strove against material obstacles, the bad roads, kerosene lamps, poor heating facilities, lack of hospitals, trained nurses, and equipment in the home where because of lack of hospitals, nearly all patients were treated.

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FIGHTING TUBERCULOSIS WITH PRINTER'S INK

BY H. E. KLEINSCHMIDT, M. D.*
NEW YORK CITY

are made, and these ultimately wear a groove in the public mind. As time goes on, the public will

The Early Diagnosis Campaign conducted annually by tuberculosis associations throughout the country is not just another publicity ballyhoo, here today and gone tomorrow, it is, rather, a carefully worked out method, a technique designed to market to the people certain important facts about tuberculosis.

Every doctor knows that this disease burden under which the back of mankind groans could be lifted if what we now know about tuberculosis could be made the common property of all people. But there's the rub! As in the field of economics, so in public health education, the real difficulty is not a surfeit of facts nor an under-consumption of them, but unequal or inadequate distribution. The task of putting into the hands of the many the saving knowledge which is now in possession of the few is one requiring a technique geared to the complicated life of today. Marketing knowledge is the task which tuberculosis and health associations have set themselves; the Early Diagnosis Campaign is but one of their methods.

This enterprise makes use of modern advertising principles. One, for example, is that of

concentrating public attention on a single idea instead of on the whole category of tuberculosis. The rifle of specific information is used instead of the shotgun of unrelated platitudes. Another principle is that of saying the same thing in a united voice all over the country at the same time. Each year, the 1,400 tuberculosis associations under the leadership of the National Tuberculosis Association select a given topic dealing with a definite and limited phase of tuberculosis and make that topic their main text for the year. On April 1, these many associations announce that text, preach from it vigorously during April, and follow up the information so given for the rest of the year to the best of their abilities and resources. This does not, of course, exclude the teaching of other facts about tuberculosis that might be pertinent to a given community; the campaign serves as a kind of peg to which to tie the entire educational program for the year.

When several hundred local associations each tell the same story, it becomes a national event. This creates national publicity. The radio, the syndicated press, the popular magazine, the big advertiser take cognizance of the stir and join in. Thus, by reiteration, many "reader impressions"

**Dr. Kleinschmidt is Director of Health Education Service of the National Tuberculosis Association. In this splendid article, he tells the readers of the JOURNAL-LANCET the history of the Early Diagnosis Campaign. Dr. Kleinschmidt has directed this campaign each year since its beginning. He has a vision of tuberculosis control which penetrates far beyond that of most physicians. He sees clearly a goal toward which he is aiming. We feel that the Early Diagnosis Campaign is one of the greatest steps that has ever been taken to control tuberculosis.*

presumably learn the essential story of tuberculosis in its entirety. Given an intelligent understanding of the tuberculosis problem, the layman may be depended upon to make sound decisions and to act rationally.

Another advantage of the method is that the educational materials, that is, the pamphlets, posters, movies, etc., prepared for the campaign are carefully planned and edited long in advance. Leading clinicians take part in selecting the information to be broadcast; the facts prepared are, therefore, authentic. Men trained in the art of writing and pictorial expression collaborate. Special pieces of literature for special groups are printed. Outlines for talks and newspaper articles are similarly produced. This enables the local lay workers to participate in the big job of marketing knowledge, even though some are not gifted with profound medical understanding. Tuberculosis organizations have taken a leaf from the experience of the modern merchant by putting up their "education" in convenient packages, so to speak, for easy marketing, with the guarantee that the product is authentic and wholesome.

The 1931 Early Diagnosis Campaign is the fourth campaign of the same general nature which has been conducted in the spring of successive years by the tuberculosis associations of the United States. These campaigns have been cumulative in effect. The first, in 1928, used the blunt challenge: "You May Have Tuberculosis," followed by a stark recital of the four common symptoms of the early type of adult tuberculosis coupled with the recommendation, "Let Your Doctor Decide." This succeeded in awakening interest and sent many adults with suspicious symptoms to the doctor and the clinic.

The following year, essentially the same message was repeated in different terms: "Early Discovery—Early Recovery." This raised the question, "How early is early?" and pointed out the need of pushing back the search to the so-called pre-tuberculous stage, or more specifically called the "childhood type of tuberculosis."

Last year, it was presumed that the public was ready to be told about childhood tuberculosis as

an entity, so the campaign concentrated on that subject. Publicity material was distributed bearing the picture of a child and the slogan, "Protect Them from Tuberculosis." This was amplified by the advice: "Keep them away from sick people; insist on plenty of rest; train them in health habits; consult the doctor regularly."

Thus the way was prepared for the campaign this year. The message, in brief, is this:

(a) Tuberculosis is still the chief cause of death in the first decade of maturity; that is, from 15 to 25.

(b) A considerable proportion of youths have already sustained slight damage from the tubercle bacillus. For most of them, the issue as to whether they will develop serious tuberculosis or forever overcome the infection will be decided during the 'teen age.

(c) Those youths who live in contact with others who have tuberculosis are most likely to be severely infected.

(d) The tuberculin test and the X-ray are indispensable aids in discovering latent tuberculosis.

(e) Adolescence is a period of strain; and strain weakens resistance.

(f) The disaster of a breakdown, that is, the development of serious disease, need not occur if the danger is appreciated and certain common sense ways of living are observed.

These facts are elaborated in the texts and materials that are widely distributed. The message is brought to a focus in the slogan, "Tuberculosis, the Foe of Youth," and a symbolic design picturing David, the daring youth, confronting Goliath.

The manual of suggestions designed to tell local tuberculosis workers how to conduct this educational campaign ends with this paragraph:

"Tuberculosis among youths is preventable. Our job is to tell the world how it can be prevented. It is for us to build up understanding support for the fighters in the trenches, the technical health workers, who are face to face with the enemy." Every doctor in the trenches (and who is not?) will appreciate the support given him back of the lines.



PULMONARY TUBERCULOSIS IN NORTHWEST

By J. A. MYERS, M. D.
MINNEAPOLIS, MINNESOTA

When THE JOURNAL-LANCET began its activities sixty years ago, there was considerable discussion among physicians as to whether tuberculosis was inherent, or contagious. In other words, they were still in darkness as to the exact cause of the disease.

Kortum had attempted to transmit the disease from person to person, and from person to animal in about 1789, but he had failed. Klencke had succeeded in transmitting the disease from persons to animals about 1843, and Villemin, about 1865, had not only confirmed the work of Klencke but had gone much further than his predecessor. These men, however, were in advance of their time. Not all physicians knew of their work, and not all who did know of it accepted it, so that neither the cause nor the nature of the disease was understood.

As far as treatment was concerned, Bodington had opened an institution about 1830, in England, but it failed. Brehmer developed a successful institution in Germany about 1858. In this country, the Channing Home for Consumptives was established in Boston, about 1857.

Little had been done with special therapy. Carlson had written about artificial pneumothorax in 1821, but did not practice it. Hippocrates and Galen had believed in change of climate, and had recommended it. Since Galen held the authority in medicine, 1500 years after his death, change of climate became a standard prescription for tuberculosis among physicians everywhere.

Brehmer had even taught that there were immune areas in the world, places where tuberculosis did not exist. To these immune areas were ascribed atmospheric conditions which prevented the development of disease, and cured it in those who had developed it elsewhere. The world was still looking for something miraculous to come from the air. Whatever could not be understood was attributed to the air. Consumption was no exception to the many diseases, such as scurvy, beri-beri, malaria, and typhoid fever, all of which were supposedly caused by the air.

Minnesota had already become a health resort in 1870. At that time many people believed there was something curative about the air in the

Northwest, and Fort Snelling had been used as an antimalarial post.

The following illustrates the general views then held: "With proper care and no unnecessary exposure, it may be safely said that coughs, colds, and that scourge of the eastern states, consumption, would be almost entirely unknown. No climate is better adapted for its speedy eradication."

A second opinion, "The whole winter is a radiant and joyous band of sunny days and starlit nights. It is the most normal climate on the continent. No other is so exquisitely symmetrical in its entire annual developments."

A third version, "The winter is intensely cold, yet so dry and clear and still that one who is properly dressed finds the climate much more agreeable than the amphibious, half fluid, half solid, gravelike chill of the East.

And lastly, "It is an every day experience to meet with residents who came to Minnesota one to ten years ago for their health. Every train brings its quota of invalids. There are witnesses by the hundred to testify to the healing virtues of this climate."

Henry David Thoreau had been here in 1861, seeking relief and cure from his tuberculosis. Thus we see the physicians of the Northwest, in 1870, when THE LANCET made its appearance, dealing with a disease of unknown cause, uncertain as to its inheritance or contagiousness, having no specific therapy, yet a prevalent disease with a high mortality rate.

Since such large numbers of tuberculosis patients had settled here, the Northwest was destined to have a tremendous tuberculosis problem. In the discussions of the State Medical Society meeting in 1871, treatment of tuberculosis was considerably emphasized. The committee on climate made its report. Attention was called to the fact that those coming to Minnesota for health were not given an opportunity to rest. The discussion which followed the report elicited the opinion that a short stay in Minnesota was not to be recommended, but that patients should remain a year or more, and that the advanced cases should not be advised to come to Minnesota.

Among those who took part in the discussion

were Doctors Murphy and Sheardown, who had come to Minnesota for their health. Dr. Murphy had gained from 130 to 225 pounds, and Dr. Sheardown, after residing here for fifteen years, was enjoying excellent health with a weight of 200 pounds. Dr. Mattocks had some observations on the length of stay of health seekers in Minnesota, but said that most of them stayed too short a time, and that within two years from the time they returned home they were dead. He cited Thoreau as an example.

In 1882, two outstanding facts were established. First, that the tubercle bacillus is the cause of tuberculosis; therefore, the controversies concerning inheritance and contagiousness of tuberculosis should have been settled. Previous to this, Cohnheim confirmed the experiments of Klencke and Villemin, and by an ingenious experiment had been able to actually demonstrate the development of tuberculosis in the eye of the rabbit. But this experiment had little effect on the world at large. The second important fact was that the same year in Italy artificial pneumothorax was attempted, although it is very doubtful whether the news of this new procedure reached the United States until sixteen or eighteen years later.

In 1885, there was another development which attracted widespread attention and which was destined to affect the program of the tuberculosis work throughout the country very materially. The Saranac Lake Trudeau Sanatorium was opened by Dr. E. L. Trudeau, of New York. In 1890, Koch used tuberculin as a diagnostic agent in guinea pigs, just before Dr. Gutman used it to detect tuberculosis among cattle in Russia. Yet the newer developments in the field of tuberculosis had had little or no effect upon the work among physicians or on the physicians being served by THE JOURNAL-LANCET. In 1890, a young man with medical training, who has lived a long life full of service in the cause of the tuberculous patient, came to the Northwest. On December 15, 1893, this physician, Dr. H. Longstreet Taylor of St. Paul, published a paper in THE JOURNAL-LANCET in which he discussed subjects such as the value of the sanatorium as a school, and the relationship of the number of beds available for the treatment of the tuberculous in a community to the decline in the death rate from tuberculosis. In this paper he predicted that every state and municipality of any size would eventually have a sanatorium for the treatment of tuberculosis. During the succeeding years, anywhere in the State where he could get together an audience, in churches, school houses,

etc., he attempted to educate the public regarding the control of tuberculous disease. He talked before medical societies whenever he had an opportunity. In 1901, he had a bill providing for the building of a State Sanatorium introduced in the Legislature, but this bill was changed to one creating a commission to investigate the subject and report to the next Legislature. In 1903, through the efforts of Dr. Taylor, the Minnesota State Medical Society adopted a resolution recommending that the State should take care of its "consumptive poor." At the next Legislature, the committee which had been appointed in 1901, reported. A bill was passed, and twenty-five thousand dollars (\$25,000) appropriated for a State Sanatorium, which was opened in 1908 with Dr. W. J. Marclay as superintendent. It is a characteristic of a great man to be able to meet one defeat after another and still carry on to ultimate success. The present superintendent of the Minnesota State Sanatorium, H. A. Burns, is a man of vision. He is rapidly elevating the standards of the institution. During the years when Dr. Taylor had been striving to get aid from the State for the "tuberculous poor," he had developed some institutional facilities. In 1903, just before the National Tuberculosis Association was organized, he had influenced the Luther Hospital, in St. Paul, to open a tuberculosis department. This was later abolished because the nurses feared the disease and refused to care for the patients. In 1905, when von Pirquet, of Vienna, was working on his famous test for tuberculosis infection, Dr. Taylor opened a private sanatorium for the tuberculous near Pine City, Minnesota. This institution has since been known as the Pokegama Sanatorium.

In 1908, the year Mantoux announced his diagnostic test for tuberculous infection, Mrs. Christian, of Minneapolis, built the Thomas Hospital for the tuberculous, which was to be operated by the Fairview Hospital.

In 1909, Dr. E. L. Tuohy, of Duluth, sponsored a bill which was passed by the Legislature, authorizing the board of county commissioners to appoint county sanatorium boards and appropriate money for the erection of county sanatoriums.

The Minnesota State Board of Health also played an important rôle by developing a tuberculosis exhibit, which traveled about the State, and on at least one occasion was carried into South Dakota. In 1908, a part of this exhibit was taken to Washington, D. C., for the meeting of the International Union Against Tuberculosis. The same State Board of Health had a bill carefully

drawn up, which was passed in 1913, providing for State aid to counties and districts desiring to build sanatoriums. The law as it was enacted also provided a sanatorium advisory commission to supervise and control the various State and county sanatoriums. This commission, of which Dr. Taylor was chairman, contributed a valuable service to the State. Later this work was transferred to the State Board of Control, and with Dr. Arnold S. Anderson as secretary of its tuberculous division is carrying on the work in a praiseworthy manner. Thus we see that after fourteen years of labor on the part of Dr. Taylor, beginning with a small appropriation of twenty-five thousand dollars (\$25,000), the State of Minnesota today has fifteen county, district and state sanatoriums. The total bed capacity of tuberculosis institutions is 2,839, of which only 78 are for private patients. The initial cost of the county sanatoriums alone represents several million dollars, and their total annual maintenance cost is approximately one and one-half million dollars. In addition, the two private sanatoriums, Pokegama and the Thomas Hospital, are still rendering great service in the field of tuberculosis.

In the Dakotas, the tuberculosis problem was not disregarded. In South Dakota, in 1909, a law was passed creating the South Dakota Sanatorium for Tuberculosis and authorizing the Board of Charities and Corrections to select a suitable site. The institution was located in the heart of the Harney Peak Forest Reserve, five miles south of the city of Custer. The original appropriation consisted of ten thousand dollars (\$10,000). This provided for fourteen patients, and the institution was opened in 1911. At present the institution accommodates two hundred and forty patients. It is under the management of the medical director and superintendent, Dr. R. E. Woodworth, who has played a prominent rôle in the tuberculosis work of the Northwest.

In 1909, the North Dakota State Legislature made an appropriation for a State sanatorium. In 1912, the first patients were admitted. The institution has grown until it now has a capacity of 260 beds.

In the development of the tuberculosis work in North Dakota, the medical profession can boast of a member who has played a greater rôle than any other single person, a man who has been an untiring worker, and who has brought to realization many of the visions of his earlier days, Dr. James J. Grassick, of Grand Forks. As superintendent of the North Dakota State Sanatorium, Dr. Lamont deserves much credit. With his re-

cent resignation. Dr. Charles McLaughlin, one of the best known and most respected physicians of North Dakota was appointed to the superintendency.

Since the World War the United States Veterans' Bureau has provided hospital facilities for a number of tuberculous exservice men in the Twin Cities, Fargo, and Hot Springs. The government also opened a sanatorium for the Minnesota Chippewa Indians, at Onigun, in 1924. The bed capacity is 82 and all forms of tuberculosis are treated. Field clinics are held in the spring and fall. Dr. W. W. Abbot is the head of the sanatorium as well as of the Onigun General Hospital, which serves all the 14,500 Minnesota Chippewa Indians.

A tremendous amount of excellent educational work has been carried on by the tuberculosis associations of Montana, North and South Dakota, and Minnesota. These state associations are component parts of the National Tuberculosis Association. In Montana, Mrs. Sara E. Morse is carrying on a splendid program. In South Dakota, Mr. H. M. Cass has done much to promote tuberculosis educational work. In North Dakota, Miss Helen Katen, with Dr. James J. Grassick, have, through their educational program, done much to promote the tuberculosis campaign. In Minnesota, Dr. E. A. Meyerding, of St. Paul, has perfected what I believe to be the most satisfactory condition that exists in any part of the United States. He has brought together the State Medical Association and the state Tuberculosis Association, so that they are working almost as a unit in tuberculosis education and control work. That this coöperation, which closely approaches the ideal, should be carried to all parts of the country, is much to be desired. There is no limit to the possibilities of tuberculosis control when the medical profession and the public work together in the educational program. Through the educational work, interest can be stimulated in the various phases of tuberculosis activities. A good example is that which is being accomplished at this time with tuberculosis among children.

In 1921, Dr. F. E. Harrington, Commissioner of Health of the City of Minneapolis and Director of Hygiene of the Minneapolis Board of Education, established a special school for tuberculous children. Although this is not a so-called Fresh Air School, it was an outgrowth of the Fresh Air School idea brought to this country from Germany in 1908. Later, organizations such as the Hennepin County Tuberculosis Association and the State Tuberculosis Associations of the Northwest took up the work of education concerning tuberculosis among children. This aided

in securing a splendid children's building at the Glen Lake Sanatorium, where Dr. E. S. Mariette and his coworkers have developed one of the best institutions for the treatment of tuberculosis in this country. It also aided in the establishment of children's departments in the North and South Dakota, Montana, and Minnesota State Sanatoriums, as well as in other institutions. This educational work has also stimulated the work of the Ramsey County Preventorium, which has been in existence for a long time, and helped to result in a splendid new plant under the medical direction of Doctors H. Longstreet Taylor and Everett K. Geer.

One phase of work which was grossly neglected in earlier days was that of proper training for health workers, especially nurses and physicians. This is rapidly being developed by providing in medical schools and nursing schools, special courses, both didactic and clinical. Of all work, this is perhaps the most important. In assigning credit for various accomplishments in tuberculosis work, we frequently overlook the work of the nurse and the physician outside of institutions. In the physician's office and in the home where tuberculosis exists, the finest type of health teaching is being done. It is a well established fact in pedagogy that the best time to do educational work is when a personal interest exists in the subject to be taught. In teaching the control of tuberculosis to the individual and the family, there exists no better time than shortly after the diag-

nosis is made. The nurses and physicians have the opportunity to do this teaching, and they are doing it well.

In the building of future programs this group must be looked to as one of the most outstanding. We must also not forget that every physician's office is a diagnostic and therapeutic center. It should also be made a center for disease prevention. We must still agree with Osler that the responsibility in tuberculosis control belongs to the medical profession, but we must ever enlist the aid of all groups who are capable of helping.

When one looks through the volumes of *THE JOURNAL-LANCET* and *Minnesota Medicine*, it is gratifying to find a goodly number of articles on tuberculosis and closely allied subjects written by physicians and for physicians. It is important that this work be continued, so that the physicians of the Northwest may always have available the latest developments in diagnosis, therapy, and prevention of this major disease.

In this day and age, advancements are being made so rapidly, and this is especially true in the field of tuberculosis, that everyone in the practice of medicine must keep abreast of the times if he is to maintain the standard set by the world at large. With the proper assuming of our responsibility, as stated by Osler, when the hundredth anniversary of *THE LANCET* arrives, a history of the control of tuberculosis rather than the progress made towards that goal will be justified.

NORTH DAKOTA TUBERCULOSIS ASSOCIATION

BY JAMES GRASSICK, M. D.
GRAND FORKS, NORTH DAKOTA

The first official information we have of the prevalence of tuberculosis in North Dakota and of its control, is contained in the Sixth Biennial Report of the State Board of Health for the years 1901-1902, by Dr. H. H. Healy, of Grand Forks, who was secretary of the Board at that time. After stating that although there were no means of knowing the exact number of cases of the disease in the state on account of lack of authentic reports, there was enough general information available to warrant the conclusion that its prevalence was a real menace. He recommended to the Legislature that the state establish a public sanatorium for the care and treatment of the

tuberculous. The haven thus planted seems to have worked, for each succeeding report made detailed reference to the subject.

In 1905, the National Tuberculosis Association was organized with Trudeau, Osler, Biggs, Sternberg, and Jacobs as its first officials. The leading health workers of the Nation became interested, and a great forward movement was taken. The International Congress on Tuberculosis was held in Washington, D. C., in 1908. This brought the world's leading tuberculosis workers, including Dr. Robert Koch, discoverer of the bacillus of tuberculosis, to our country. This gave a great impetus to the movement and

in a short time state vied with state in tuberculosis control.

In January, 1909, the North Dakota Tuberculosis Association was organized, and it has continued to function till the present time. In the same year the Legislature made an appropriation for the selection, purchase, and improvement of a site for a State Sanatorium, and a committee was appointed to carry out the provisions of the Act. A site was procured in the Turtle Mountains, near Dunseith, now known as San Haven. It had elevation (1,800 ft.), protection against the northern winds, beautiful surroundings, and an abundant supply of pure spring water. On this site were erected, in 1912, the first buildings, and patients were admitted in the fall of the same year. It has now as fine an equipment for the care and treatment of the tuberculous as may be found anywhere. It has a capacity of 260 beds and there is usually a waiting list of patients.

The first Christmas Seal Sale in our State was conducted in 1909, and it has been held each year (with the exception of 1918 when the American Red Cross made a donation). The Seals have enabled the North Dakota Tuberculosis Association to carry on its Good Health program, for apart from goodwill offerings they are its only means of support. Their educational value is great, while at the same time they give every one an opportunity of doing something for the cause, thus making possible an Independent Health Service, by the people and for the people.

Prior to 1923 the State Board of Health had very inadequate financial support, the Superintendent being a part time official. As a matter of fact very little could be done by it in the way of public health work. The Tuberculosis Association was better equipped with funds and workers, and did much that ordinarily should have been done by the State Board of Health. It received for some years an annual appropriation from the State in recognition of what it was doing. When the State Board of Health was being reorganized as the State Department of Health, the State Tuberculosis Association used its influence and pledged its support for this very worth while project, the assistance it had been receiving from the State being turned over to the support of the newly formed organization.

In recognition of the public health work that the Tuberculosis Association had done in the State, it was given a place on the Advisory Council and thus cordial coöperation of the two health agencies, independent and governmental, was

brought about and the increased efficiency of both assured.

There are several outstanding activities of the North Dakota Tuberculosis Association that merit attention. In addition to its direct fight against tuberculosis, it sponsored other means of attack. It early recognized the need of some means of contact between the workers on the firing line, and those at headquarters directing the operations. To fill this gap, in 1913 the *Pennant* was published. It is a monthly periodical containing up to the minute data on public health matters, together with a résumé of what is being done by the Association. There have been distributed from four to six thousand copies each month. It is hard to measure educational values, but in the opinion of its promoters it has been well worth the time, effort, and money that have gone into it. In the seventeen years of its life it has carried over six million pages of reading matter. This in the very nature of things must have had some influence, and we trust it has been in the main for good.

The North Dakota Tuberculosis Association was the first organization in the State to advocate School and Community Health Nurses. In the *Pennant* for August, 1914, appeared this paragraph: "A whole time health officer for the State and a whole time nurse for the County should be the slogan of the Good Health Campaign." To stimulate interest in the subject, the Association organized and conducted a public health nursing service, detailing workers to communities requiring such, for a longer or shorter period as the case might demand. In this way the public was educated and the call for nurses soon became quite general, and in November, 1914, the first rural school nurse in North Dakota was employed. In 1915, the Association employed a field worker to do educational work. An exhibit of views, tabulations, maps, statistics, etc., was ensembled, and lectures, and demonstrations given, in all parts of the State. Fairs, meetings, gatherings, service clubs, etc., were attended and interest aroused.

Recognizing that there were many juveniles at the Sanatorium that were of necessity deprived of school advantages, in 1916, the Christmas Seal Open Air School was opened at the State institution, the cost of equipment and salary of the teacher being defrayed by the Association. This meant much for these unfortunates, who from no fault of theirs were temporarily confined to the Sanatorium.

By 1918, the Association had become so well established and the calls for help so urgent that a whole time director became imperative. The

extra work that was thus made possible, demonstrated the wisdom of this forward step, and there has been no falling away from the standards that were then established. The Director is the only officer receiving a salary, all others give their services free. This policy leaves a large share of the available funds for the activities of the organization.

In 1921, the Association undertook a project that was a little out of the ordinary. As has already been stated, nurses were employed to give demonstrations of their value as a public health asset. Out of this service came the vision of the Traveling Health Clinic, where a physician and nurse, working together as a mobile unit might accomplish more than when acting individually and separately. With this in mind a competent and reliable registered physician and nurse were employed and put in the field with an auto, equipped with everything needed for emergency treatment and care of the sick; and to them were given orders to go into the highways and byways to find the ailing, to minister to those in need, and do so ethically and efficiently.

In many sections of the State there were large areas with very inadequate medical and nursing services. To these the Clinic went and gave freely of what it had to offer, irrespective of racial, social or economic conditions, with special emphasis on the prevention of tuberculosis and the care of those afflicted with the disease. It was an adventurous undertaking but the results were so flattering that it must be regarded as one of the outstanding activities of the Association's good health program. The excuse for the Clinic was service, and this included professional help, medical, and nursing, to those who from economic or other untoward conditions were not in a position to help themselves. To educate the masses as to the cause, prevention, and care of communicable diseases, emphasizing tuberculosis, was a large part of its work. The following may be of interest as showing what was done in the six years of Clinic Service that was given:

Miles traveled	27,857
Public Clinics held.....	385
Home calls made	640
Number examined	22,579
Cases of Tuberculosis found.....	623

This does not give the thousand and one odds and ends of helpful deeds done by the Clinic's personnel as they went in and out among the people to whom they ministered.

In addition to the above, the Association has sponsored tuberculosis surveys in Fargo, Grand Forks, Bismarck, and in the other principal cities

of the States, as well as in the rural districts of many of the counties of the State, and the information thus procured was filed with the State Department of Health, and formed a basis for follow up work.

In 1928, the Association recognized that there were many under par, under privileged children in the State that would be materially benefited by a season in the open. With this in mind a Fresh Air Nutrition Camp has been conducted for three successive summer seasons. Experience and observation have demonstrated that good food, fresh air, sunshine, play, and rest under the care and supervision of competent trained workers, are potent agencies in a health building and character forming program. In the site are five acres of land bordering on the shores of beautiful Lake Isabel, Kidder County. During the past year very generous gifts have been received. B. P. O. E., Bismarck, donated a cottage complete in every detail with a capacity of sixteen beds. The State A. O. U. W. built and completely furnished a cottage with every nicety of fixture of sixteen bed capacity. The Northern Pacific Railway donated a coach, which in its coats of white inside and out makes a most attractive and practical addition to the group. These concrete expressions of good will for the cause of human betterment are very gratifying to those who have interested themselves in the project.

Kissed by the sun that browns their bodies and hardens their bones, fanned by the winds that tone their tissues and invigorate their frames, bathed by the waters that cleanse their bodies and add zest to their living, calmed by hours of peaceful rest that sweeten their lives, strengthened by foods that Mother Earth has so bountifully supplied, and supervised by efficiently trained workers, the Camp has been a veritable godsend to many a malnourished youngster.

Another concrete project that was sponsored by the Association was the Children's Pavilion at the State Sanatorium. This was designed as a preventorium, where children could be sent from homes where they had been in contact with active cases, a sort of clearing house where those who were found to be infected could be given proper treatment, and where the doubtful cases could be kept under proper supervision until their exact condition could be ascertained. The Pavilion has room for about sixty children and is kept full most of the time. The Association donated \$4,000.00 for the equipment of this building, and it has amply demonstrated its value as a public health asset.

The foregoing are among the high lights of the

Association's practical health program, whose goal is that every man, woman, and child in our State may be so well informed on the established facts pertaining to tuberculosis, and incidentally to other communicable diseases, that they may intelligently, rationally, and successfully combat their progress. In this work the Association has tried to enlist the coöperation, sympathy, and support of individuals and agencies that have to do

with the moral, social, and economic uplift of our people, and its success in these lines is a matter of history. It has watched the death rate of tuberculosis fall from first place, which it held in 1909, when the Association was organized, to sixth place which it now occupies, with a death rate among the lowest death rates in the States of the Union.

EPIDEMIOLOGY IN TUBERCULOSIS*

By F. E. HARRINGTON, M.D.

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We find in Webster's Dictionary epidemiology defined as a medical science treating of epidemics. The word "epidemic" is taken from the Greek "epi" among, and "demos" the people. In the study of conditions from effect to cause, we find our first epidemiological outline in the Mosaic Law. The word "epidemic" has by common usage come to represent almost anything which can be counted in numbers in a large ratio of the whole. In the application of epidemiology to tuberculosis, we can and do have an exceedingly fascinating study.

Epidemiology of communicable or transmissible diseases among mankind has been a fairly well developed study, growing both in reliability and importance as medical and public health sciences have developed means for the pursuit of the study. Bacteriology changed the epidemiologic picture of typhoid fever from miasm to Eberth bacillus. With the announcement of the recognition of the acid fast bacillus by Koch as the specific agency in tuberculosis, epidemiology became more of an exact science in its relation to tuberculous infection. After the establishment of the intermediary host, or a two life cycle development had been demonstrated, for yellow fever, malaria, hookworm, bubonic plague, and other similar diseases, the studies of cause and prevention became more scientific and more fruitful.

Epidemiological studies of acute epidemics with known factors of transmission are common practice, but the epidemiologic studies of a disease having the chronicity of tuberculosis, even with the causative agent known, is not so simple. The application of epidemiologic researches with their relation to tuberculosis as practiced in the Divi-

sion of Public Health of Minneapolis, is the result of several years of study. True epidemiology should deal not only with the causative agent and the method of transmission, but with each phase of prevention. As applied in Minneapolis, the epidemiological studies are truly factors in prevention. No further research is needed to understand that tuberculosis is a disease of bacterial causation, not produced spontaneously but by the invasion of a specific organism, which is transmitted to the human being from a specific infection elsewhere by direct or indirect routes. Obviously a study must begin with a definite premise. In our studies we begin with the reported patient.

Again, to generalize for a moment, public health activities have simplified epidemiological studies where certain means or methods of transmission are known, and measures directed toward the prevention have been exercised. I refer particularly to the tuberculin testing of cattle, and the pasteurization of milk and of milk and cream entering into the manufacture of milk products. With the elimination of bovine tuberculosis through these public health measures, and the knowledge of the rarity of avian, porcine or piscatorial infection in man, the processes of study bring us more directly to the transmission of the infection of tuberculosis from person to person. The purpose of our studies in Minneapolis has been, of course, directed toward the discovery of the source of the infection in individuals whose tuberculosis diagnosis found its way to the records of our office. Of equal importance, and equally stressed, however, are the measures for the prevention of the continued spread from the case in hand, or as far as possible, the prevention

*Read before the Minnesota Trudeau Medical Society, December 13, 1930.

of the continued spread from the original source when discovered.

As previously outlined, the modes of transmission other than relatively direct communication are immediately eliminated from the study, and are not reverted to unless the more obvious route of invasion cannot be ascertained. This elimination is by a brief process. The question of raw or pasteurized milk is, of course, the first one, and it usually completes that much of the investigation. As we have been taught, bovine tuberculosis through a related selectivity is found more commonly in bones, joints, and glands. This may have an important bearing on the result of the milk investigation. The pulmonary form being almost exclusively of human origin, and more than likely of respiratory invasion, the hunt for the source is predetermined. To go into the minute details would be rather an impeachment of the intelligence of a group such as I have the pleasure of addressing. As a matter of interest, however, a few statements will not be amiss.

Starting with a given case, many factors must be considered. A small percentage of the information in our cases comes to us on death certificates. The stage of the disease, by no means uniformly but roughly can in a measure demark for us the period of the life of the individual when the seeding probably was done. Obviously, when a child presents an early positive intradermal skin test and x-ray findings of an acute parenchymal infiltration with beginning bronchial node calcification, the epidemiological studies point to a recent and probable intimate contact with the organism, which is leaving the body of some other person in a demonstrable form if all of our factors can be put to work. The procedure in such a case would be to investigate the immediate family. The next step would be to study the close associates, who would include relatives of the second degree. Quite as important as any are those of the two previous generations, whose advanced years have given them paternal or maternal privileges, and whose declining metabolism makes possible the dangers of infection of those upon whom their affections are showered. In order to complete our picture, the discovery of tuberculosis in an active form which can be ascribed as the source of infection must be found. Only too often this is obvious because another case in the family has already been reported. Where not so definitely determined, the discovery means the careful examination of all persons to whom this child has been exposed.

The first move is a complete and competent his-

tory. This signifies more than the English language can indicate. A first history dealing with possible exposure, eliciting family histories can give three different results in the hands of three history takers. Care, therefore, requires taking repeated histories, and we find frequently that a very thorough first history is added to by subsequent ones. Memories, especially at the time of trouble, are treacherous. No little trouble is experienced in arriving at a diagnosis where the pathology of the disease has not reached the stage of obvious tuberculous illness. X-ray technique as well as interpretation is important, and the technique of skin test readings bears a relationship to the ultimate result of the interpreted findings.

In spite of the difficulties in the diagnosis of tuberculosis at the hands of the physician not well qualified by extensive experience, or with a tendency toward leniency in his own findings for the benefit of the family fear of a positive result, we have been more than successful in finding a logical source for the hundreds of cases that have come to our attention, and of which studies have been made. One exceedingly interesting factor in the discovery of the source of the spread of tuberculosis has been broken down fibroid phthisis in persons who have lived the allotted three score plus years, constantly with the family in spite of their infection, and even in the sunset period of life evidencing little that would lead to a diagnosis of tuberculosis. Our records show that in 465 such persons taken at random without reference to diagnosis or examination, sputum examinations in the laboratory have been positive in 19 or in 4 per cent. If such a figure holds true for the grandparents, grand uncles, and grand aunts living in homes with the grandchildren, and grand nieces and grand nephews, one potent source of childhood tuberculosis has been definitely pointed out.

Closely associated, and an activity that cannot be entirely divorced from epidemiological investigations, is the question of the care of the person accredited as the source of infection. It is in this phase of tuberculosis control that the Health Departments, and the Sanatorium Commissions can work in close harmony. It is often too late to do the best work after the admission of a patient to the Sanatorium. Studies of cause and transmission must be made upon the earliest information of the patient obtainable, and such studies should be ready for the information of the institution to which the patient is finally sent, and arrangements made for the care of other cases discovered through such studies made.

RURAL EXPERIENCES WITH TUBERCULOSIS*

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This paper is submitted merely as the result of an interesting experience with tuberculosis in a rural community. It is realized that neither are any new facts being contributed, nor new theories promulgated, yet it is hoped that the experiences set forth may lead others, similarly situated, to a broader conception of the rural tuberculosis problem, just as they have led the writers.

During the summer, fall, and early winter of 1929, the community found itself fairly well overrun with an epidemic of whooping cough. The last cases of pertussis scarcely finished the final paroxysms of cough, before one of the high school girls developed measles. Soon there were approximately sixty cases of measles scattered through the village and surrounding community, and the last case was not released from quarantine until early spring of 1930.

These two epidemics, mild though they were, heralded an increased incidence of tuberculosis. It was not long in putting in its appearance, and, though it spread horror in its wake, it lighted the way which has led to the detection of other cases in no way related to measles or pertussis, 19 cases in exactly nine months.

The first case of tuberculosis appeared in a family living in the village. Both whooping cough and measles in that order had afflicted four of the seven children in the family. While the eleven months old baby was recovering from a bronchopneumonia following measles, the oldest daughter developed the first symptoms of what proved to be a tuberculous meningitis. The spinal fluid was tuberculous. Partial post mortem examination revealed also the presence of a far advanced adult type of lesion in the right lung.

As the father of this family had been unable to work for some months on account of weakness, nervousness, loss of weight, and night sweats he was sent to the University Hospital. There, a positive history, physical examination, and Roentgen rays of the chest made the diagnosis of pulmonary tuberculosis, incipient, bilateral. He was referred to the State Sanatorium at Ah-Gwah-Ching for treatment.

Two cases of active tuberculosis in the family

led to the disclosure that three years previously, while living on a farm, the whole family had used milk from a cow which had died quite unexpectedly. A veterinarian had been called, and, after post mortem examination, proclaimed that the cow had died of tuberculosis. This fact, of course, suggested a relationship between bovine and human tuberculosis, which, it was felt, could not be definitely proved. It also suggested the necessity of attempting to prove the presence of tuberculosis in the other members of the family.

Owing to the limited financial resources of the family, arrangements were made to send the balance of the family to the University Hospital as rapidly as bed space was available. County authorities objected to such a procedure, and the village authorities objected to X-ray support of the Von Pirquet evidence. All but three of the seven remaining members of the family showed a positive Von Pirquet; all members of the family showed an afternoon rise of temperature; some had coughs; all were undernourished; none raised sputum. Arrangements were made with the State Sanatorium to take the mother, father, and the four children who reacted to the tuberculin test. The other two were sent to an orphanage where they were placed under observation. Subsequently, they, too, were sent to the Sanatorium, and there three of the children were found to be afflicted with tuberculosis.

So the first chapter was written, depicting one death from tuberculous meningitis, four cases of pulmonary tuberculosis following either measles or pertussis, five cases in one family, and a possible relationship between bovine and human tuberculosis. With this rude introduction to all the various problems involved, the necessity for constant vigilance for the appearance of other cases presented itself. Also, it was common knowledge that the girl who succumbed to meningitis assisted in the delivery of the village milk supply, a fact which required contemplation.

These events were transpiring for a month or six weeks after the middle of December, 1929. In the early spring of 1930, one of the high school graduates of the year before presented herself for examination due to a persistent cold

*Presented before the medical staff of the Lymanhurst School for Tuberculous Children, on January 27, 1931.

and cough. She had been going to normal school and complained of being unable to get her studies because she constantly felt tired. She had had a cold since Christmas and coughed considerably. Other complaints were: loss of weight, anorexia, an afternoon rise of temperature, and expectoration. Physically, she presented all the signs of bilateral tuberculosis. She was asked to record her temperature four times a day and was given sputum cups. The first sputum specimen sent to the state laboratories revealed tubercle bacilli. She was sent, through the influence of relatives, to an internist in Minneapolis who confirmed the diagnosis of bilateral hilum tuberculosis, and advised her to undergo treatment at home. This patient is 19 years of age and introduces the "teen age girl" problem in tuberculosis. Her progress has been satisfactory under home management.

Clinically, the third case group is one of the most interesting. The picture first presented was that of a three-year-old girl, who had never been ill until March, 1930, when she developed measles followed by bronchopneumonia. She recovered from the pneumonia but was never quite as vivacious as she had been previous to her attack of measles. Her parents were very concerned about her health and had given her cod liver oil, kept her in the sunshine and fresh air, and had done everything possible to improve her general health.

In spite of these measures she became sick on June 5, 1930. She was not as active as usual; she had an afternoon temperature and some fever in the morning; she had no appetite and she voided very frequently. On physical examination her temperature was found to be slightly over 100° F., her pulse 120, tonsils slightly inflamed, one ear drum slightly hyperemic, but not bulging, and the urine showed many pus cells. Otherwise her physical examination was entirely negative. Acid sodium phosphate and urotropin, gargles, hot packs to the neck and ear, soft diet, abundant fluids and daily catharsis were advocated. The following day her temperature was lower, her appetite improved, she was more active, and physical and laboratory findings improved. On the second day of illness, however, she seemed to be slightly stuporous, and the urine, though it contained fewer pus cells, had a trace of sugar. There were no changes in the other physical findings.

It was felt that, due to the glycosuria and the fear of growing difficulty in caring for her at home, she should be hospitalized. An X-ray of the chest showed an old, healed lesion of tuber-

culosis with an infiltrative type of recent reinfection, findings which were confirmed by both a pediatricist and roentgenologist. The day following her hospitalization, the sugar had disappeared from the urine, but the number of pus cells had increased. She seemed much brighter and more active and her fever and pulse rate were lower. Improvement did not last long, for at ten o'clock in the evening she went into a convulsive state lasting twenty minutes. A second prolonged convulsion occurred within an hour, and this one was brought to an end by spinal drainage.

Spinal fluid was under slightly increased pressure, was clear, had a low cell count, and contained a predominance of lymphocytes. A pellicle formed, and this, combined with the findings by X-ray, and the clinical picture, was assumed to be sufficient evidence for a tentative diagnosis of tuberculous meningitis. This diagnosis was confirmed by a prominent pediatrician, and, later, guinea pig inoculation proved the diagnosis conclusively. Though spinal punctures were done every 12 hours for two weeks, the patient gradually drifted into a semi-comatose state and passed away during the fourth week of illness.

During the course of the disease in this patient, Von Pirquet tests were applied on the parents and their three other children. The mother's test and that of the 11 year old daughter were positive. When this evidence was checked by X-ray, it was found that the mother's plates revealed no tuberculosis, while those of the daughter showed a childhood type of lesion in one side of the chest. These findings were confirmed through consultation. This patient was placed under treatment at home, and has made satisfactory progress, which is being followed by X-ray.

While these two cases were in progress, two cases of childhood tuberculosis and a case of incipient, apical, adult type were found in another family. The first case was in a young girl of five years, whose history included periodic rises of temperature, with lack of sufficient findings to make a positive diagnosis. She had no appetite, her weight was below normal, and she was not as active as a child of that age usually is. The only physical finding was a slight impairment of resonance over a band-like area extending upward and laterally from the hilum region to the lung periphery, anteriorly, on the left side. Forty-eight hours after the Von Pirquet test was applied, there was an area of vesiculation of four centimeters diameter about the point of application. X-rays showed the presence of an infiltrative lesion in the left chest. When other members of the family were subjected to the skin test,

the father was found to be allergic to tuberculin, and X-ray plates of his chest proved the presence of an incipient, apical lesion on the right side. The two year old baby was found afflicted with a childhood lesion. All X-rays reported positive were submitted to experienced roentgenologists.

These three cases are related to, and had associated with the "teen age" patient already mentioned. Also, they lived on a dairy farm and when cows in the herd on this farm were later tested, one cow reacted positively and was disposed of.

Immediately after graduation or during the early part of June, the valedictorian of the high school seniors presented herself for examination, complaining of a cold, or cough, which had persisted for several months. She had lost weight, and, though she had played basketball with the girls' team, she said that it often exhausted her. Her appetite was poor, her cough was productive, and she felt feverish in the afternoon. She had had measles as had her eleven months old sister. Her chest was sufficiently suggestive in its physical findings to point to the "rest cure," and the first specimen of sputum sent to the state laboratories demonstrated the presence of tubercle bacilli. She was sent to a sanatorium as soon as arrangements could be made, and passed away in four months. Her baby sister was allergic to the tuberculin test, and sanatorium X-rays showed an early childhood lesion. She is at present under observation.

Both of the last two patients were daughters of the owner of the village milk route. The older of them had associated with the first case of tuberculous meningitis mentioned, was a school-mate of the sixth case reported, and delivered milk on the route until late in the spring. Two cows from this herd were tuberculosis suspects two years previously. The herd producing milk for this route was retested, even though it had been tested eight months previously. There were no positive reactors in the herd during either test. Two of the other cases mentioned occurred in customers on this route. Other people also were distributing milk from other cows. These cows, too, were tested, and found to be free from tuberculosis. In this way it was determined that none of the cases within the village resulted from contaminated milk.

So far, the cases presented have embraced numerous problems concerned with immunology, the relationship of bovine and human tuberculosis, and the predisposition of pertussis and measles patients to a tuberculous infection. Yet,

with the exception of meningitis, none of the complications of pulmonary tuberculosis have been found. Three of the remaining cases exemplify one or another of the complications.

During the latter part of August, 1930, a male, white patient, 63 years of age, entered the office seeking treatment for frequent, loose, watery, and sometimes bloody stools, and frequency of urination. In addition to these complaints, his history revealed that, twenty years previously, he had spent a year or more under treatment in a tuberculosis sanatorium. For the past year, he had had a persistent, productive cough; gradually over that period of time, he had lost his appetite, and developed insomnia. His past history also included hemoptysis. He had lost 14 pounds in weight during the preceding six months, and had become more and more dyspneic. Physically, he was found to have a temperature of 101°.2 F., pulse rate 112, moderately coarse râles heard both anteriorly and posteriorly in both lung apices. Râles were present after cough on both sides, but the right side, in addition, showed pronounced lagging and decreased mobility, retraction of supra- and infra-clavicular fossæ, narrowing of the shoulder strap area, decreased pitch of percussion note anteriorly and posteriorly, increased vocal fremitus, pectoriloquy and bronchophony.

Various circumstances militated against all the procedures necessary for absolute confirmation of the diagnosis. However, on account of the history and findings a tentative diagnosis of far advanced, active, bilateral, apical, pulmonary tuberculosis with tuberculous colitis was made. He was sent home and placed at absolute rest. A high caloric, high vitamin diet was given, fresh air and sunshine advocated, and he was advised concerning subsequent treatment. It has been possible to confirm the diagnosis by demonstrating tubercle bacilli in his sputum.

One of the most interesting cases, from a diagnostic standpoint, is that of a young man, 28 years of age, who returned home after two or three years spent in one of the industrial centers. Four months prior to his return home he began to notice that he tired easily, and at times became slightly dyspneic. He had no cough, gave no history of pneumonia or pleurisy, raised no sputum, had a normal appetite, but had lost fourteen pounds weight during the past eighteen months. He did, at times, have a slight palpitation of the heart. He had been told by physicians in the city that he had a gonorrheal prostatitis, and "goitre." Physically, there were no findings except a temperature of 99° F., and a pulse rate of 94, with a systolic blood pressure

of 108, diastolic pressure of 70. Repeated prostatic massage smears were negative, and he emphatically denied a history of infection. Urinary findings were normal; the complete blood picture was normal except a red blood count of 3,862,000. The first basal metabolism test was -2 , and the second one was well within normal limits. Daily temperature records revealed an afternoon rise, and, as every other lead had proven fruitless, even knowing that a tuberculin test was of questionable value, one was applied. Within sixty hours there was marked vesiculation about the site of the test. Roentgen ray, as interpreted by a roentgenologist, demonstrated a basilar lesion on the left side, and a "suspicious-looking area of increased density in the right lung periphery."

Quite dramatic was the next case, at least in its first appearance. During the evening of one of the early days of August, a thirteen year old farm boy came to the office. He had become acutely ill with a cough, high fever and general malaise four days earlier. Though he had coughed persistently for several months, not much significance had been attached to it. Since the acute onset of the more grave symptoms four days before, weakness had compelled him to stay in bed. However, on the afternoon of the day he first appeared in the office, he coughed up a cupful of blood. It was that incident which forced him to seek medical attention.

His temperature was 104° F., and his pulse 150. He was coughing bloody sputum all the time, and he was quite weak and emaciated. In addition to râles and all the other physical findings in both apices, the bases were quite dull to percussion and showed more of the bronchial than bronchovesicular breathing. A temporary diagnosis of bilateral pulmonary tuberculosis, far advanced, was made.

He was sent home and put at absolute rest, not even being allowed to feed himself. Ice packs were applied, opiates administered, fresh air by living in a tent urged, a high caloric, high vitamin diet advocated, and all supportive measures possible instituted. Upon reaching home, he had a second hemorrhage, and this was followed on the fourth day of the above régime by a third hemorrhage. As soon as transportation seemed advisable, he was sent to a sanatorium where his progress has been wholly satisfactory. Tubercle bacilli were demonstrated in the sputum, and X-ray findings at the sanatorium revealed tuberculosis.

Owing to the cramped quarters in which the family of this patient lived, skin tests were placed on all of them. Only one test on one of the girls

in the family was positive. Plates of the chest in this case taken at the sanatorium, demonstrated an early childhood lesion. She was sent home for treatment and observation.

Another case, that of a nineteen year old girl, had an acute onset. She was suddenly seized with intense, sharp, knife like pain in the lower portion of the right chest. Breathing accentuated the pain. Her fever rose to about 105° , and her pulse rate became greatly accelerated. She had no cough, no history of previous pneumonia or pleurisy, and for several days, very few physical findings in the chest. Ultimately, however, she developed signs of a consolidation in the base of the right lung. These findings were not conclusive, and an X-ray revealed a pleurisy with effusion together with an infiltrative type of lesion which proved to be tuberculosis. Over the course of four months, as followed by X-ray plates, the lesion resolved considerably, and, when the patient was last seen, the infection had regressed sufficiently to hold forth a favorable prognosis.

Among the cases cited have been instances of tuberculous meningitis, pulmonary hemorrhage, tuberculous colitis, and pleurisy with effusion. In the last case, pulmonary tuberculosis was suggested by the presence of laryngitis. A young man, 21 years of age, caught a slight cold just before his departure to one of the state colleges. In the course of a day or two a laryngitis developed, and the chest findings persisted and were suggestive of a left apical infection. This young man had passed an examination for a military training camp and had been discharged as physically well. His schooling was postponed, and he was sent to a sanatorium, where he is improving with unusual rapidity. Diagnosis in this last case was confirmed on September 17, 1930, just nine months to a day from the beginning of the first case described.

These experiences have been very impressive in emphasizing the necessity of constant attention to the detection of tuberculosis. As a result, a definite routine has been established to be followed in the observation of doubtful cases. A detailed history is taken, and a careful physical examination performed. When these two procedures arouse suspicion, the patient is taught how, and requested to keep a daily temperature record with readings recorded every four hours. This record is continued over at least ten days and if possible two weeks. Any rise above 99° F., in a male patient, or 96.6° F., in a female patient or any variation of over 1.5 degrees during the day is considered, if persistent, corroborative evi-

SUMMARY OF REPORTED CASES

Case Number	Name	Age	Sex	Adult Type	Childhood Type	Following Measles	Following Pertussis	Infected Milk Supply	Tuberculosis Associates	Suggestive History	Physical Findings	Temperature Record	Von Pirquet	Sputum Findings	X-Ray	Spinal Fluid	Necropsy Findings	Complications					
																		Meningitis	Pleurisy	Colitis	Laryngitis	Hemorrhag	
1	L.E.	13	F	X	--	-	X	X	X	X	X	X	--	--	--	X	X	X	-	-	-	-	
2	Mr.E	48	M	X	-	-	-	X	X	X	X	-	--	-	X	--	--	-	-	-	-	-	
3	R.E.	17	M	-	X	-	-	X	X	-	-	X	X	--	X	--	--	-	-	-	-	-	
4	L.E.	10	M	X	X	X	X	X	X	X	X	X	X	--	X	-	--	-	-	-	-	-	
5	D.E.	8	F	-	X	X	-	X	X	-	-	X	X	--	X	--	--	-	-	-	-	-	
6	A.W.	3	F	X	X	X	-	-	-	X	-	X	X	--	X	X	--	X	-	-	-	-	
7	I.W.	12	F	-	X	-	-	-	-	-	-	-	X	--	X	--	--	-	-	-	-	-	
8	E.M.	5	F	-	X	X	-	X	X	X	X	X	X	--	X	--	--	-	-	-	-	-	
9	Mr.M	33	M	X	-	-	-	X	X	-	-	--	X	--	X	--	--	-	-	-	-	-	
10	L.M.	2	M	-	X	X	-	X	X	-	-	-	X	--	X	--	--	-	-	-	-	-	
11	V.Z.	15	F	X	--	X	-	O	X	X	X	X	--	X	X	--	--	-	-	-	-	-	
12	E.Z.	3	F	-	X	X	-	O	X	-	-	X	X	-	X	--	--	-	-	-	-	-	
13	H.D.	19	F	X	-	-	-	-	X	X	X	X	--	X	X	--	--	-	-	-	-	-	
14	C.S.	63	M	X	--	-	-	-	-	X	X	X	--	X	--	--	--	-	-	X	-	X	
15	B.P.	15	M	X	-	-	-	-	-	X	X	X	--	X	X	--	--	-	-	-	-	X	
16	L.P.	9	F	-	X	-	-	-	X	-	-	--	X	--	X	--	--	-	-	-	-	-	
17	H.K.	28	M	X	-	-	-	-	-	X	-	--	X	--	X	--	--	-	-	-	-	-	
18	R.H.	19	F	X	-	-	-	-	-	-	X	X	X	--	X	--	--	-	X	-	-	-	
19	S.S.	21	M	X	-	-	-	-	-	-	X	X	X	-	X	--	--	-	-	-	X	-	
		9F 10M		12	9	7	2	8	12	10	10	13	13	4	17	2	1	2	1	1	1	2	

LEGEND

X Yes or Positive -- Not Observed O Suspected - No or Negative

dence. Repeated sputum examinations are made. The Von Pirquet tuberculin test is used routinely, but if any doubt prevails the Mantou test is applied. X-ray plates are taken and are submitted to some recognized roentgenologist for interpretation. Basal metabolism tests are made and repeated as necessary. Tuberculosis is diagnosed only after the postulates of the National Tuberculosis Association are fulfilled.

While these clinical experiences were unfolding themselves, two other phases of the rural

tuberculosis problem were being attacked, Sanctioned by the county commissioners, and under the supervision of the State Livestock Sanitary Board, all of the cows in Morrison County were tested for tuberculosis. This work was done in August, and the final results have just been made available. During September, 607 of the grade and high school students of the county were given the Mantou test. Dr. E. A. Leggett of Minneapolis performed the test, and each of the students who reacted positively was X-rayed at St.

Gabriel's Hospital in Little Falls. These plates were interpreted by both Dr. H. A. Burns, superintendent of the State Tuberculosis Sanatorium, and Dr. J. A. Myers, president of the Minnesota Public Health Association. It is felt that an attempted correlation of the results may point to some relationship between the cases of human and bovine tuberculosis.

Thirty-five accredited veterinarians and two state and federal veterinarians conducted the cattle tests. The summary of the results of this test now on file in the County Auditor's office is as follows:

Total number of herds tested.....	3,453
Total number of infected herds and suspects	192
Percentage herds infected.....	5.5
Total number negative cows in infected herds	3,589
Total number cattle tested.....	54,493
Total number reactors.....	572
Total number suspects.....	33
Total number cows under feeder quarantine	45
Percentage of infection disclosed in County	1.05

Through the retesting of suspects and the cows under feeder quarantine, the total number of reactors, and the percentage of infection have been slightly increased.

This campaign revealed that seventeen cows in Morrison County and one in Todd County had been infected and were supplying cream for the local creamery. It was learned, also, that milk, cream, butter, buttermilk and cheese are sold from the creamery. However, not one of these products is sold unless complete pasteurization has previously been carried out, so that it is not felt that this is a point of dissemination. It was believed, though, that the tuberculous cattle might be a source of infection for the owners' families, and upon investigation, three cases were found in the family of the owner of one of the tuberculous cows. At present, the families of the owners of the remaining tuberculous cattle are being investigated. It now appears that at least one more case will be disclosed in this way, from all the parents, and it was found that the Mantou test on all the high school students in the county. Permission could not be obtained

In September, another movement against tuberculosis, that of testing the school children of the county, was inaugurated. Little Falls health authorities suggested the plan; it was approved by the Morrison County Medical Society, and the work was done by Dr. E. A. Leggett, of Minneapolis. The original intention was to apply the

parents of some of the grade school children desired to have them tested. As a consequence, though there are 948 high school students in the county, only 607 tests were performed, and, of this number, a small proportion represent tests of grade school students.

The summary of Dr. Leggett's report, the use of which she has been kind enough to permit, is as follows:

Total number tested.....	608
Total number tested under 10 years of age	29
Total number tested over 10 years of age.....	579
Those reacting positively to 0.1 mg. of O. T.	58
Those reacting positively to 1.0 mg. of O. T.....	62
Total positive reactors over 10 years of age	120
Total positive reactors under 10 years of age	0
Highest percentage positive reactors in any group	29
Lowest percentage positive reactors in any group	5.7
Percentage of reactors in entire group.....	19.7

Of the 608 tests applied (one of those tested was not a school student), 120 reacted positively, which indicates a percentage incidence of reactors of 19.7. Only 118 of the suspects thus found were X-rayed. Interpretation of these plates by Dr. Burns and Dr. Myers revealed tuberculous lesions in 66 cases. When it is considered that all of the 608 individuals were believed to be well and healthy, and that 11 per cent were found to have been infected, the magnitude of the problem of rural tuberculosis is immediately visualized.

Efforts are now being made to correlate the results of the county cattle test and those of the Mantou tests. It is felt that it may be possible to trace some of the cases of human tuberculosis to some of the positive cattle reactors. If it were possible to see that, throughout the whole county, the entire family of each owner of an infected herd be tested and investigated, and the same procedure carried out in the families of all those reacting positively to the Mantou test, the solution of the problem would not be far away.

Regardless of the relationship of the two tests, and of bovine and human tuberculosis, the experiences and facts already set forth should be sufficient to point to the high incidence of tuberculosis in rural communities. It is only through the utilization of every agency available for the early detection of tuberculosis, that more widespread dissemination of the disease will be prevented.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

BY H. MARK, M. D.
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Pulmonary tuberculosis has been known for centuries. Hippocrates, "The Father of Medicine," was aware of it and described it as the disease which is "most difficult to treat and which proves fatal to the greatest number."

Since that time science has endeavored to produce ways and means of diagnosis so that pulmonary tuberculosis could be recognized in its earliest stage, and not after it has become so far advanced that it assumes Hippocrates' definition as a disease "which proves fatal to the greatest number."

In 1865, Villemin, the French physician, proved that tuberculosis could be transmitted from one individual to another. This was indeed an advance.

With the discovery of the tubercle bacillus, the tuberculin test, and X-ray, we have come into the modern day, which still permits a great number of unnecessary deaths from pulmonary tuberculosis, and a great number of adolescent and young adults to have their incipient tuberculosis develop into moderately or far advanced cases. Too often patients fail to go to their physician because they are not sick enough, but often enough, the physician, because of a negative sputum and negative clinical examination does not have a chest X-ray taken of a doubtful or of a positive history case. In this manner the pulmonary tuberculosis of the man or woman, in a vast majority of cases, without the patient's knowledge, is allowed to develop into a moderately or far advanced case.

Bray¹ states that "in 75 per cent of all early cases, no tubercle bacilli are found and only 76.5 per cent show râles." This would mean that the sputum cannot be relied upon and that the clinical examination may give a false impression when one is confronted with an early case of tuberculosis.

It is, therefore, exceedingly important that one should pay more attention to the history and bear in mind TUBERCULOSIS. It is for us to know that in the earlier stages, pulmonary tuberculosis is distinctly a disease of subjective

symptoms, which brings us to the question of a prodromal stage in pulmonary tuberculosis.

Pulmonary tuberculosis has been described for ages as an insidious disease coming on without any definite symptoms; however, tuberculosis is caused by the tubercle bacillus as demonstrated by Koch. This tubercle bacillus, as we all know, has its toxin, and, therefore, we can conceive that as in the case of other infectious diseases a certain time must elapse after the invasion of the germs before the production of symptoms whether they be due to toxins, reflexes, or the disease in the pulmonary tissues.

Chapman² in a series of cases found the following as the first symptoms of tuberculosis:

Fatigue	24%
Cough	24%
Chills and Fever	12.5%
Pains in Chest	10.5%
Hemoptysis	8.5%
Colds	8.5%
Loss of Weight	1.5%
Tuberculosis in Family	1%
Night Sweats	0.53%

Williams and Hill³ in 1499 cases found as the first symptom:

Cough	1,309 cases
Loss of Weight	1,115 cases
Loss of Strength	1,069 cases
Early A. M. Fatigue	883 cases
Loss of Appetite	805 cases

One naturally is interested to know whether or not the persistent occurrence of cough and fatigue as early symptoms does not mean a clue to the early diagnosis of this disease. To see whether or not the same condition is found at the State Sanatorium, I have chosen 426 cases from the files.

In this study I endeavored to find the most predominant presenting symptom, and to see whether or not I could observe a prodromal period in the development of the disease from its onset to its end. These cases were not selected but taken at random. Out of the 426 cases:

Only 115 were in Stage I on admission
169 were in Stage II on admission
142 were in Stage III on admission

This is very interesting in view of the fact that this Sanatorium is intended and is maintained as a sanatorium for incipient cases.

TABLE NO. 1

SYMPTOMS	ONSET								AFTER ONSET						
	A.	S.A.	C.	Stage			Total Pre- domi- nant	Not Pre- domi- nant	Onset Total						Grand Total
				I	II	III				3 mo.	6 mo.	1 yr.	2 yrs.	3 yrs.	
Cough	29	43	37	23	36	50	109	129	238	34	15	12	15	43	356
T. B. Contact	0	7	65	25	31	16	72	121	193	2	2	1	0	0	198
Fatigue	7	30	40	16	40	21	77	92	169	39	7	16	12	49	292
Loss of Weight	7	7	7	5	6	10	21	106	127	46	9	11	15	44	252
Pleurisy	21	12	27	16	26	18	60	20	80	12	5	11	4	16	128
Upper Resp. Colds..	15	17	13	14	19	12	45	18	63	3	1	0	2	8	77
Clinical Exams.	0	1	4	1	3	1	5	44	49	62	31	18	14	66	240
Incr. Temp. and Rapid Pulse	1	1	0	1	0	1	2	38	40	28	13	5	2	18	106
Hemoptysis	12	2	4	6	4	8	18	13	31	39	24	19	18	52	183
Pain in Chest	0	2	5	5	2	0	7	24	31	9	5	5	2	9	61
Positive Sputum	0	0	0	0	0	0	0	22	22	68	43	23	30	71	257
Pneumonia	5	2	7	5	6	3	14	2	16	2	1	0	0	2	21
Night Sweats	0	0	2	1	0	1	2	17	19	31	8	6	5	25	94
Dyspnea	1	0	2	0	2	1	3	15	18	15	3	3	1	11	51
X-ray	0	0	0	0	0	0	0	6	6	4	18	3	5	22	58
Laryngitis	0	0	0	0	0	0	0	4	4	3	7	3	5	12	34
Bone and Gland	0	0	3	0	0	3	3	0	3	0	0	0	0	0	3
G. I.	0	0	1	0	0	1	1	1	2	0	0	0	0	2	4
Operative	1	0	0	0	0	1	1	0	1	0	0	0	0	0	1

In the preceding table each symptom is listed in the order of its occurrence as either the most predominant symptom or as one of a group of onset symptoms (not predominant symptoms). The cases in which, for example, fatigue is the predominant symptom, I have divided into groups in which the history shows the disease as having either acute, subacute, or a chronic onset. The predominant symptom is also divided according to the stage at which the disease was present at the time of admission to the Sanatorium. The rest of the cases in which fatigue was shown as the symptom of onset but yet not a predominant symptom are shown in the column marked "not predominant."

Three months, six months, and one year, etc., would mean the time after onset of the disease that that particular symptom occurred, if at all, before admission to the Sanatorium. In patients with positive sputum and hemoptysis, I have also taken into consideration their stay at the Sanatorium, and three months, six months, one year, two years, and three years would mean the time after onset, regardless of whether it was before, during, or after admission to the Sanatorium.

COUGH

This investigation has shown us that cough was most frequently the first symptom and was most often the reason why the patient first saw his physician. Cough was present in 238 cases at onset or 55.6 per cent, and in 109 cases or

25.5 per cent it was the most predominant symptom. In 129 cases or 30.1 per cent, it was present at onset but coupled with other symptoms and was overshadowed by them. This was usually where loss of weight and fatigue assumed the major rôle, and less often with the other symptoms. Cough was present in 356 cases or 84.1 per cent cases sometime during the course of the disease before the admission of the patients to the Sanatorium. Chronic cough as the major symptom has been repeatedly shown to be predominant as an early symptom by all tuberculosis investigators, especially Williams³.

Of these 109 cases, twenty-three reported to the physician in the Stage I of the disease, thirty-six in stage II, and 50 in stage III. Acute colds or upper respiratory infections rated sixth and were present at onset in 63 cases or 14.7 per cent and as the major symptom in 45 cases or 10.5 per cent.

TUBERCULOSIS CONTACT

This is listed as second but can hardly be considered as a symptom. Inasmuch as it appears so repeatedly in the background, one cannot hesitate in giving it its true place in the alignment. It is indeed a valuable clue in a well-taken history. Lawrason Brown⁴ stated that intimate exposure, especially in infancy, childhood, and young adult life demanded careful consideration. I found that 193 cases or 45.3 per cent presented this ultimate contact somewhere in the

background. In 72 cases tuberculous contact was present as the only clue in the history. If those 72 cases had been allowed to progress no doubt the other symptoms would have shown themselves in due time.

25 of these were in Stage I

31 of these were in Stage II

16 of these were in Stage III

It is, indeed, important to note that 47 cases, even though there were not any symptoms sufficient to alarm the patient, were beyond the initial stage of the disease. I cannot help feeling that an epidemiologist can do heroic work in this field of preventive medicine.

FATIGUE

This is listed as third. In 169 cases or 39.9 per cent, fatigue was present at onset, and in only 77 cases or 18 per cent was it the predominant symptom. This would include either A. M. or P. M. fatigue, loss of pep, and loss of strength.

LOSS OF WEIGHT

This is listed as fourth with 127 cases or 29 per cent, but in only 21 cases or 4.9 per cent was loss of weight the major symptom. This investigation revealed that in over 50 per cent of the cases the onset of the disease presented either cough, fatigue, or loss of weight as the first of a group of symptoms. In most cases we could separate the predominant symptoms, but in seven cases it was impossible to do so. These seven presented cough, loss of weight, and fatigue as equally prominent.

PLEURISY

Present at onset in 80 cases or 17.7 per cent. 128 cases had pleurisy sometime or other before admission. 20 others gave a history of pleurisy with effusion years before.

POSITIVE SPUTUM

This is rated eleventh and was present at onset in only 22 cases. Since 118 cases or 27.7 per cent were incipient at the time of their admission, it is apparent that only a very small percentage showed positive sputum during the first stage. 68 more became positive after three months, and others later, so that in all 257 cases or 60.3 per cent, cases were positive sometime during the disease.

NIGHT SWEATS

Rated twelfth and was present in only 19 cases at onset. Altogether the symptom was present in 94 cases before their admission to the Sanatorium. In 75 cases it was present three months or later after onset. This would indicate that night sweats cannot be regarded as a symptom of onset but rather as a symptom present in more advanced cases as the result of toxemia.

HEMOPTYSIS

Defined by Lawrason Brown as a dram or more of blood. This is rated ninth with 31 cases or 7.2 per cent, but in 152 cases or 35.6 per cent, it was present at three months or later. Of the 31 cases at onset only six were in the incipient stage.

The other symptoms in their order of occurrence are given in the table.

It is therefore very apparent, not only through my work but through that of others such as Fagen⁵, Williams³, etc., that there are certain symptoms which are conspicuous by their prominence in early tuberculosis. These, of course, are chronic cough, fatigue, and loss of weight.

The investigation has led me to the opinion that tuberculosis in adults is singular in its attack on the human body and not manifold as others would have us believe. It is my firm conviction that adult pulmonary tuberculosis can only be acquired through inhalation of the germs. The bacilli cause an inflammatory reaction in the bronchioli and alveoli. This is catarrhal in character and leads to the production of an early hacking cough. Later expectoration follows. This early catarrhal inflammation may also produce an early laryngitis. I found it to be present in at least four cases at onset. The bacilli then act on the alveoli with the production of small broncho-pneumonic consolidation. Here the first signs of toxemia occur in the form of fatigue, A. M. and P. M., or loss of pep, and loss of weight. As the area of pneumonic disease spreads, the toxemia becomes more intense and other symptoms such as fever, rapid pulse, night sweats, etc., appear.

It is my opinion that cough, due to the catarrhal condition of the bronchioli, loss of weight and fatigue due to the early toxemia, are the first group of symptoms to appear. This was shown previously by the results of investigators. The time of the reaction depends upon many factors but especially two, virulence of the invader and resistance of the host—germ and soil.

I am pleased to call these three symptoms, cough, fatigue and loss of weight symptoms of onset or symptoms of the prodromal period. Whenever a history shows either one, two, or all three of these symptoms and when these symptoms cannot be explained by any other organic condition, it behooves the physician to remember TUBERCULOSIS and to govern himself accordingly. Let these three symptoms be the early

triad and when unexplainable, have a chest X-ray taken.

As I have shown before the sputum may be negative, the clinical examination negative, but the X-ray with proper technique and interpretation will lead to a correct diagnosis.

Once again let me repeat that a positive history case would be one with either cough (present for six weeks or longer), loss of weight (5 per cent or more), or fatigue (undue and unexplainable) or a combination of these present at onset. Many cases will not present these symptoms unless one is very thorough in his questioning, and many times they will be missed because the patient had attached no importance to a slight cough or fatigue.

There is no question that other symptoms such as amenorrhea, chest pains, indigestion, etc., may be the first, but in these cases too, there will be no explanation unless a careful history and a good X-ray of the chest are taken. Let us therefore conclude by saying that an examination of a patient complaining of various symptoms, especially cough, fatigue, and loss of weight, is not complete unless we can rule out tuberculosis by a chest X-ray, in the face of negative sputum and a negative clinical examination.

The diction of Pottenger is well worth repeat-

ing. "The first and most important point in the diagnosis of tuberculosis is when to expect it." It has been stated by Pottenger⁶ that possibly 80 per cent of early clinical tuberculosis can be placed in the class of probable or definite tuberculosis by the history alone.

The cure of tuberculosis depends upon the early diagnosis. Circumstantial evidence present, tuberculosis must be considered a possibility in the diagnosis and must remain there until by some method or other it can be excluded.

SUMMARY

1. Predominance of cough, fatigue, and loss of weight as symptoms of onset.
2. The grouping of cough, fatigue, and loss of weight as symptoms of onset in the production of a catarrhal prodromal period as the first stage of pulmonary tuberculosis.
3. The great number of cases with intimate tuberculous contact in the background.
4. The importance of history in the diagnosis of early pulmonary tuberculosis.
5. Night sweats rarely a symptom of onset.
6. Hemoptysis rarely a symptom of onset.
7. The earlier the diagnosis the better the prognosis as to cure.

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PREGNANCY AND TUBERCULOSIS

Harvey B. Matthews, Brooklyn, and Louise Stevens Bryant, New York (*Journal A. M. A.*, Dec 6, 1930), sent a questionnaire to 1,000 married women graduates of Trudeau Sanatorium, inquiring as to their experience with child-bearing. Nearly half responded, 484 in enough detail to make possible certain comparisons and observations, which are presented. One third of the 484, or twice the highest figure set for involuntarily sterile marriages, never became pregnant. (Estimates for involuntarily sterile marriages range from one in six to one in ten.) The other two-thirds proceeded with caution. They became pregnant only about half as frequently as the average, if the women attending birth control clinics can be taken as the average. Finally, they brought to living birth a far smaller proportion of the children conceived than appears usual. Just over half of the group, 287, bore even one living child, and these bore a scant two apiece. Those who bore more than one or two living children had done so before contracting tuberculosis. Losses before and immediately after birth were disproportionately high, averaging thirty-five to every hundred living births. But losses after birth were extremely infrequent. Most of the

babies were breast fed and kept on a careful regimen, and nearly all were given medical examination, so that only a third of the expected number died in infancy, and few thereafter. Of the 579 children born alive, 556 were still alive when their mothers reported, fifteen years later. The majority of these women did not claim any relationship between tuberculosis and pregnancy. Only one-third of those pregnant at any time found that the disease began or recurred with a pregnancy or after a delivery or an abortion. But, of all women pregnant before "cure," 44 per cent had found their tuberculosis adversely affected. The more advanced the tuberculosis, the more deleterious the effect of pregnancy. The women who took sufficient time before getting pregnant after being "cured" (three years or more), and who obeyed all rules and regulations after leaving Trudeau, fared better than those who did not. Postpartum hemorrhage occurred in a very large proportion, amounting to 44 out of 317 cases, or 13 per cent. Menstrual disorders were very common among this group of tuberculosis women, being reported by 47 per cent. Out of the 579 children born, 556 are alive, and 501 are healthy and well. Fifty-five are below par, and only 9 of these have had tuberculosis in any form, or have been suspected.

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This issue devoted exclusively to Tuberculosis, in recognition of the Early Diagnosis Campaign now being conducted by the National Tuberculosis Association.

TUBERCULOSIS CONTROL IN RURAL COMMUNITIES

The statement is heard frequently that the cities are well organized to attack the tuberculosis problem, particularly among children; that through the school system arrangements can be made to examine them and special provision can be arranged for their care. The country, it is said, presents a much greater problem than the city. After all it is doubtful whether it makes any difference as to whether children reside in the city or the country. It appears to be a question of arousing the proper interest among those responsible for the health of a community. The practitioner of medicine in a village with a large rural practice, if he is sufficiently interested and has the will to do it, can accomplish marvelous results in tuberculosis control.

The article in this issue entitled "Control of Tuberculosis in a Rural Community" by Doctors Edwin J. Simons and Herman E. Hilleboe, is a remarkable piece of work in tuberculosis control. They have demonstrated not only what can be done but what should be done by physicians in rural communities. In their most interesting report they discuss the diagnosis of tuberculosis as they found it in various organs of the human body. The diagnostic measures employed are the most modern. They deal with the disease as it exists in the different age periods of life, from tuberculosis meningitis in the infant to chronic fibroid tuberculosis in the aged. They have administered modern treatment. They have emphasized the great importance of epi-

demiology and have not overlooked a program for future work. It is only through the utilization of every agency available for the early detection of tuberculosis, that more widespread dissemination of the disease will be prevented.

Doctors Simons and Hilleboe, in the introductory paragraph of their report, state that there is nothing particularly new about their diagnostic methods, etc., "yet it is hoped that the experiences set forth may lead others, similarly situated, to a broader conception of the rural tuberculosis problem, just as they have led the writers." It is obvious that these physicians are attacking the tuberculosis problem of their rural community from various important angles. They are not only using what is known to the medical profession, but they have taken advantage of the knowledge of those interested in the animal industry, and have invited the veterinarians to work with them in driving tuberculosis from the animals of their community. They see the great value of the services of the properly trained public health nurse in the control of tuberculosis, and are doing everything possible to have such a nurse employed in their county.

If their work can be continued, and tuberculin testing be more generally applied to the children of the community at six months to twelve months intervals, and the necessary subsequent work done, one can see the time when the advanced case of tuberculosis will no longer be found in their community and when clinical tuberculosis in any stage will be a rare disease.

Speaking of tuberculosis control, Osler said to physicians: "The leadership of the battle against this scourge is in your hands. Much has been done, much remains to do. By early diagnosis and prompt, systematic treatment of individual cases, by striving in every possible way to improve the social condition of the poor, by joining actively in the work of the local and national antituberculosis societies you can help in the most important and the most hopeful campaign ever undertaken by the profession."

Simons and Hilleboe have taken seriously Osler's admonitions and have proved that much can be done to control tuberculosis by physicians in a rural community. Tuberculosis control in any community is the responsibility of the physicians of that community. They have already or can quickly obtain all of the necessary preparation for the work. In these days when the public is manifesting so much interest in disease, it behooves physicians to assume the leadership and direct all health work. If they do not, it is certain that nonmedical groups will. There is a valuable lesson for every one of us in the article by Simons and Hilleboe.

J. A. M.

THE ANTIVACCINATIONIST

In most communities the majority of the people are so constituted as to be able to adjust themselves to changing conditions. They are willing to learn and therefore accept established facts whether new or old. There is a minority group, however, who have fixed opinions, so fixed in fact that nothing new makes any impression upon their minds. It was such a group that clung to the opinion that the world was flat long after the fact was established that the world is round. In fact, they died clinging to their erroneous opinion.

From a psychological point of view there are some very interesting minority groups at work who are opposed to all medical facts, particularly those pertaining to vaccination and immunization against diseases such as small pox and diphtheria. In short, they are antimicrobial groups. Among their chief weapons are falsehoods or misinterpretations of facts.

In Minnesota the announcement was recently made that in certain towns of a county the tuberculin test would be applied to the school children on written consent of the parents of each child. The communities agreed that the idea was good, and a high percentage of the parents granted permission to have the test applied to their children. The announcements were made in certain newspapers. On the day the tests were to begin three or four telegrams and long distance telephone calls were received by superintendents of schools, members of school boards, etc. One telegram read as follows:

"Understand children of your school to be tuberculin tested for tuberculosis. Urge holding this up until you make thorough investigation of process. Tuberculin is worthless as test of human tuberculosis and dangerous to health and life of

those on whom used. Can prove this by writing."

The following letter was later received:

"I understand that the use of tuberculin is planned on the children of your city.

"I cannot too strongly emphasize the urgency of preventing this infection of your school children with tuberculin until such time as an open hearing of the matter can be held for you to determine the facts.

"I would gladly meet with the superintendent and members of the school boards of the schools included in this proposed wholesale use of tuberculin at some convenient point to these schools and without expense to the schools. Will welcome the presence of your health officers, and will be glad to have questions asked me. In turn requiring the right to question their health examiners or their representatives, to bring out the facts of the matter.

"My only interest in this is to protect the health of our school children. You will be amazed at what is being put over in our schools these days under the guise of health makers."

In some communities of this county where those in charge were well informed, these messages had no effect, but in one community the members of the school board and other officials were disturbed and refused to allow the physicians and nurses to proceed with the test. This was not a permanent refusal since sufficient arguments were submitted to show that the organizations, the nurses, and physicians applying the test, were interested in the future health and welfare of the community.

The information has recently come to us that in one small district where the local physicians had helped to develop a great deal of interest in vaccination, 1,500 pieces of free literature were distributed by an antimicrobial organization.

THE JOURNAL-LANCET is already providing and will continue to provide the members of the medical profession and their friends with ammunition to fight the groups who would, through ignorance, prejudice, and superstition, take away from the American people their greatest asset—good health.

J. A. M.

THE JUBILEE MEETING

The fiftieth annual meeting of organized medicine in North and South Dakota territory will be commemorated by a joint session of both state associations at Aberdeen, South Dakota, June 1, 2, 3 and 4, 1931, and gives great promise of going down in history as a most successful and memorable event.

At this time we recall too, how the Minnesota and Wisconsin State Associations combined in a somewhat similar celebration on the occasion of the fiftieth anniversary of the Wisconsin State Association by holding their meetings at the head of the lakes; one in Duluth and the other in Superior with a joint banquet and excursion on Lake Superior, in the early nineties. That was a most outstanding and never-to-be-forgotten event for those who were present and often referred to later.

The program at Aberdeen is very inviting. There will be two presidential addresses naturally: Dr. Andrew Carr, Sr., of Minot, N. Dak., will speak at 1:30 P. M., Tuesday, June 2nd, and Dr. Percy D. Peabody of Webster, S. Dak., at the same hour on the following day. There will be guest speakers from adjoining states and provinces including those from the Twin Cities, Rochester, Winnipeg and Chicago and the forenoons are to be devoted to Clinics in the different fields of medicine and surgery, obstetrics and dermatology. The President of the American Medical Association, Dr. E. Starr Judd, will speak Wednesday afternoon on "The Clinical Aspects of Disease of the Biliary Tract."

The writer being Chairman of the General Ar-

rangements and Program Committee of the Minnesota State Meeting can well appreciate the splendid work done by those of the Dakotas in this preparation.

A. E. H.

THE MINNESOTA STATE ASSOCIATION MEETING

The scientific program of the meeting at Minneapolis beginning May 5th, 1931, is a varied one intended to be useful and interesting to all members of the profession. The Tuesday morning session will be of special interest to the General Practitioner and Obstetrician until 10 o'clock when, after an intermission, surgeons from New York and Rochester, Minn., will have the floor. The afternoon will be given over to Clinics at the University. Thirty-four members of the teaching staff will show cases in four different rooms and changes from one to any other may easily be made because of the convenient grouping, thus giving each visitor an opportunity of seeing that in which he is most interested. Wednesday's program should interest all, the three outstanding features will be: A Symposium on Diagnosis, A Symposium on Therapy and finally four papers on Fractures.

A. E. H.

THE FOURTH PRIZE OF \$250.00

Will be awarded by the Minnesota Society of Internal Medicine "to the practicing physician, exclusive of members of this Society, in the State of Minnesota who has been deemed most worthy to receive a prize in research in clinical medicine." All physicians who are in active practice and who are legal residents of Minnesota may become candidates for the award. Physicians employed in government service are eligible if their legal residence is the State of Minnesota. Physicians who are wholtime teachers or research fellows in teaching institutions may not become candidates for this prize. All inquiries should be addressed to, and theses should be submitted to the committee before October 1, 1931. E. T. F. Richards, Chairman, Hamm Building, St. Paul, Minnesota.

Prize for 1927 awarded to Dr. Adolph Hansen, Faribault, Minnesota.

Prize for 1928 awarded to Dr. Max Seham, Minneapolis, Minnesota.

Prize for 1929 awarded to Dr. Hilding Anderson, Duluth, Minnesota.

IMPORTANT LECTURES

The Minnesota Medical Alumni Association organized, and is now giving, a course of lectures to the senior

medical students under the direction of Dr. Sam Solhaug. These lectures are on topics not usually included in the regular school curriculum. They are being given weekly on Friday afternoons at 5:00 o'clock in the Eustis Amphitheatre throughout this spring quarter. The attendance has been very gratifying and if the project meets with general approval it is planned to have the series repeated in the spring and fall hereafter, in order that all seniors may have the advantage of hearing the speakers.

The course as arranged this spring is as follows: Dr. A. S. Hamilton has already spoken on "Medical Ethics," and Dr. John Hynes on "Art and Experience in Medicine." Dr. P. D. Ward, Superintendent of Miller Hospital, St. Paul, will speak on, "The Relation of Hospital and Staff Physicians." Dr. W. A. Coventry, of Duluth will discuss, "Medical Organizations." "Business Methods in Medicine" will be discussed by Mr. A. G. Stasel, and Dr. N. O. Pearce will present the topic, "Social Service in Relation to Medicine." "Public Health and Civic Aspects of Medicine" will be the subject of a talk by Dr. O. E. Locken, of Crookston, and Mr. E. J. McGough, Attorney, will talk on "Compensation Insurance." Other subjects may be included in subsequent courses.

NORTH AND SOUTH DAKOTA STATE MEDICAL ASSOCIATIONS IN JOINT SESSIONS TENTATIVE SCIENTIFIC PROGRAM

SACRED HEART SCHOOL AUDITORIUM, ABERDEEN, SOUTH DAKOTA

First Day—Tuesday, June Second Nineteen Thirty-one

- 8:00 A. M. Opening Exercises. Announcements.
- 8:30 A. M. Clinic. Obstetrics—J. C. Litzenberg, M. D., Minneapolis, Minn. "Prof. Obst. and Gyn., Univ. of Minnesota Medical School."
- 9:30 A. M. Clinic. Cardio-Vascular Diseases—Walter W. Hamburger, M. D., Chicago, Ill. "Asst. Clin. Prof. Med., Rush Medical College."
- 10:30 A. M. Recess. "Visit Exhibits."
- 11:00 A. M. Clinic. Orthopedic—Emil S. Geist, M. D., Minneapolis, Minn. "Assoc. Prof. Orth. Surgery, Univ. of Minn. Med. School."

Noon

- 1:30 P. M. Presidential Address—Andrew Carr, Sr., M. D., Minot, N. Dak. President North Dakota State Medical Association.
1. "Toxemia of Pregnancy." J. C. Litzenberg, M. D., Minneapolis, Minn. Discussion—Geo. M. Williamson, M. D., Grand Forks, N. Dak.
 2. Endocarditis—William Boyd, M. D., Winnipeg, Ont., Canada. "Prof. of Pathology, Univ. of Manitoba Faculty of Medicine, Winnipeg." Discussion—J. O. Arnson, M. D., Bismarck, N. Dak. Recess. "Visit Exhibits."
 3. "Prognosis in Cardiac Diseases"—Walter W. Hamburger, M. D., Chicago, Ill. Discussion—William C. Nichols, M. D., Fargo, N. Dak.
 4. Paper. "Diet in Orthopedic Surgery"—Emil S. Geist, M. D., Minneapolis, Minn. Discussion—P. H. Burton, M. D., Fargo, N. Dak.

Second Day—Wednesday, June Third Nineteen Thirty-one

- 8:30 A. M. Clinic. Gynecological—Rae T. LaVake, M. D., Minneapolis, Minn. "Asst. Prof. Obst. and Gyn., Minn. 4."
- 9:30 A. M. Clinic. "Pyloric Infections."—Joseph L. Miller, M. D., Chicago, Ill. "Clinical Prof. Med. Rush Medical College."
- 10:30 A. M. Recess. "Visit Exhibits."
- 11:00 A. M. Clinic. "Diseases of the Biliary Tract."—E. Starr Judd, M. D., Rochester, Minn. President-elect A. M. A. "Prof. Surg. Univ. of Minnesota Post Graduate Medical School."

Noon

- 1:30 P. M. Presidential Address—Percy D. Peabody, M. D., Webster, S. Dak. President South Dakota State Medical Association."
1. Paper. "Diseases of Eye"—Thomas Allen, M. D., Chicago, Ill. Discussion—Rolfe Tainter, M. D., Fargo, N. Dak.
 2. Paper—Joseph L. Miller, M. D., Chicago, Illinois. Discussion—Paul Roe, M. D., Minot, N. Dak. Recess. "Visit Exhibits."
 3. "The Clinical Aspects of Disease of the Biliary Tract."—E. Starr Judd, M. D., Rochester, Minn. Discussion—Eric P. Quain, M. D., Bismarck, N. Dak.
 4. Paper. "Leucorrhea."—Rae T. La Vake, M. D., Minneapolis, Minn. Discussion—J. E. Countryman, M. D., Grafton, N. Dak.
 5. Paper. "The Operative Treatment of Hemorrhoids; an Anatomical Method"—W. A. Fansler, M. D., Minneapolis, Minn. Lantern Demonstration.

Third Day—Thursday, June Fourth Nineteen Thirty-one

- 8:30 A. M. Clinic. Dermatology.—Henry E. Michelson, M. D., Minneapolis, Minn. "Assoc. Prof. Derm. Univ. of Minnesota Medical School."
- 9:30 A. M. Clinic. Medical.—J. A. Myers, M. D., Minneapolis, Minn. "Assoc. Prof. in Med. Univ. Minn. Medical School."
- 10:30 A. M. Recess. "Visit Exhibits."
- 11:00 A. M. Clinic. Pediatric.—Henry F. Helmholtz, M. D., Rochester, Minn. "Prof. Ped. Univ. Minn. Post Graduate Medical School."

Noon

- 1:30 P. M. Paper. "Treatment of Syphilis."—Henry E. Michelson, M. D., Minneapolis, Minn. Discussion—J. D. Graham, M. D., Devils Lake, N. Dak.
2. Paper. "Fever of Obscure Origin in Childhood"—Henry F. Helmholtz, M. D., Rochester, Minn. Discussion—Floyd O. Woodward, M. D., Jamestown, N. Dak. Recess. "Visit Exhibits."
 3. "Relationship Between Tuberculosis in Children and Adults."—J. A. Myers, M. D., Minneapolis, Minn. Discussion—J. E. Hetherington, M. D., Grand Forks, N. Dak.
 4. Paper. "The Justification of Collapse Therapy for Pulmonary Tuberculosis."—Everett K. Geer, M. D., St. Paul, Minn.

PROGRAM OF THE MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION

An afternoon of clinics led by the best medical talent available in the University of Minnesota medical teaching staff and elsewhere, is announced as the major feature of the Seventy-eighth annual meeting of the Minnesota State Medical Association, to be held in Minneapolis, Minnesota, with headquarters at the Nicollet Hotel on May 5 and 6, 1931.

This interesting departure from ordinary program composition is to occupy the entire Tuesday afternoon session of the meeting. A total of thirty-two clinics will be held in four amphitheaters of the University Hospital and Medical School, which are to be turned over to the State meeting for the occasion.

The remainder of the two day scientific program will be divided into three main divisions, all to take place at the Nicollet Hotel.

Surgery and Obstetrics will occupy the Tuesday morning session. Wednesday morning will be devoted to a Symposium on Diagnosis, and Wednesday afternoon to a Symposium on Therapy, similar to the successful symposium that concluded the Duluth program last year.

Among the distinguished visitors who will be present for the meeting are; Dr. George Ward Gray, Jr., Professor of Obstetrics and Gynecology at Cornell University, New York, who will speak as George Chase Christian Memorial lecturer on "Carcinoma of the Uterus" Tuesday morning, and Dr. Drew William Luten, Assistant Professor of Clinical Medicine at Washington University, St. Louis, Mo., who will talk Wednesday morning on "Diseases of the Heart with Special Reference to the General Practitioner."

An important series of clinic demonstrations and exhibits, all of them intimately related to the scientific program will be on view at the hotel. Among these will be the University of Minnesota, the Mayo Clinic, and the State Department of Health exhibits, a tuberculosis demonstration, and the display of Brush bacteriological specimens.

The Southern Minnesota Medical Society will again present a gold medal for the best individual contribution to these exhibits, following a precedent set last year.

The Women's Auxiliary to the Minnesota State Medical Association, which holds its annual meeting at the same time, will join with the Medical Association for the annual banquet of the

two organizations to be held at the Nicollet Hotel on Tuesday night.

The House of Delegates will meet on Monday night, May 4, at 7:00 P. M. at the Nicollet Hotel.

SCIENTIFIC PROGRAM OF THE SEVENTY-EIGHTH ANNUAL MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION

Tuesday Morning May 5, 1931—Ball Room, Nicollet Hotel, Minneapolis, Minnesota
SYMPOSIUM

8:30	Prenatal Care	
	M. C. Bergheim.....	Hawley
8:45	Recurring Preëclamptic Toxemia; Its Clinical Significance	
	R. D. Mussey.....	Rochester
9:00	Accidents of Labor	
	J. R. Manley.....	Duluth
9:15	Infections	
	L. W. Barry.....	St. Paul
9:30	Toxic Neuritis in Pregnancy	
	N. J. Berkwitz.....	Minneapolis
9:45	Discussion	
	J. C. Litzenberg.....	Minneapolis
10:00	INTERMISSION	
10:15	Recent Developments in the Management of Duodenal Ulcers	
	D. C. Balfour.....	Rochester
10:30	Carcinoma of the Uterus	
	Geo. Gray Ward, Jr., Professor Obstetrics and Gynecology, Cornell University..	New York
	Citizens' Aid Society Memorial Lectures	
11:00	When Does Disease Begin?	
	Charles H. Mayo.....	Rochester

UNIVERSITY OF MINNESOTA CLINICS

Tuesday Afternoon, May 5, 1931

1:00 P. M. to 5:45 P. M.

A. Room 129, Millard Hall, 160 seats

		SUBJECT
1:00 P. M.	James M. Hayes.....	Surgery
1:30 P. M.	Leo G. Rigler.....	X-ray Diagnosis
2:00 P. M.	S. Marx White.....	Heart
2:30 P. M.	K. W. Stenstrom and Cyrus O. Hansen.....	X-ray Therapy

3:00 P. M.	INTERMISSION	
3:15 P. M.	Arthur S. Hamilton.....	Neurology
3:45 P. M.	Arthur A. Zierold.....	Surgery
4:15 P. M.	B. J. Clawson and Macnider Wetherby.....	Arthritis
4:45 P. M.	Hobart A. Reimann.....	Pneumonia

	B. Room 102, Institute of Anatomy, 226 seats	
1:00 P. M.	Moses Barron.....	Medicine
1:30 P. M.	E. T. Bell.....	Kidney
2:00 P. M.	Hilding Berglund.....	Kidney
2:30 P. M.	George E. Fahr.....	Heart
3:00 P. M.	INTERMISSION	
3:15 P. M.	Archie H. Beard.....	Diabetes
3:45 P. M.	Frederick H. K. Schaaf.....	Blood
4:15 P. M.	O. J. Campbell.....	Malignancy
4:45 P. M.	Reuben A. Johnson.....	Medicine

C. Enstis Amphitheater, University Hospitals, 160 seats
 1:00 P. M. George Gray Ward, Jr. Cancer Gynecology
 1:30 P. M. F. C. Rodda Pediatrics
 2:00 P. M. Wallace H. Cole Orthopedics
 2:30 P. M. F. J. Hueneckens Pediatrics

3:00 P. M. INTERMISSION

Eustis Amphitheater, University Hospitals, 160 seats
 3:15 P. M. M. J. Shapiro Heart (children)
 3:45 P. M. H. E. Michelson Dermatology
 4:15 P. M. Harry P. Ritchie Plastic Surgery
 4:45 P. M. C. A. Stewart Pediatrics
 D. Todd Amphitheater, University Hospitals, 160 seats
 1:00 P. M. Frank E. Burch Eye
 1:30 P. M. Henry L. Ulrich Heart
 2:00 P. M. Horace Newhart Ear, Nose, and Throat
 2:30 P. M. W. T. Peyton Malignancy

3:00 P. M. INTERMISSION

3:15 P. M. Owen H. Wangenstein Surgery
 3:45 P. M. R. T. LaVake Obstetrics
 4:15 P. M. John A. Urner Gynecology
 4:45 P. M. C. Donald Creevy Urology

Note: Make your selection now of the clinics you desire to attend. The last five minutes of each clinic period will be devoted to questions. Changes between rooms can also be made at this time. There will be plenty of signs to help you out. For your information clinic A is varied, B chiefly medical, C chiefly pediatrics, and D chiefly surgical. If you have any special interest, e. g., heart disease, pediatrics, etc., it will be possible for you to attend every clinic by going from one room to another. There are no duplicate subjects at any time (e. g., 3:15 P. M., neurology, diabetes, pediatrics, heart disease, and surgery). Study the list very carefully and plan your schedule now so that you will not be disappointed. 32 clinics are to be presented by men who know their subjects and are able to put it over. Patients will be used as much as possible. This is an opportunity presented by very few state medical organizations, and we are proud that we have so much talent among our membership.

Wednesday Morning, May 6

8:30 Common Mistakes in Ocular Diagnosis
 John M. Robinson Duluth
 8:45 A New and Effective Nonsurgical Method
 for the Treatment of Chronic Suppura-
 tion of the Middle Ear
 Chas. Hymes Minneapolis
 9:00 Traumatic Abdomen
 Roy Raiter Cloquet
 9:15 Tuberculin Testing
 J. A. Myers Minneapolis
 9:30 Cardiology and the General Practitioner
 Drew Luten, Asst. Prof. Clinical Medi-
 cine, Washington University St. Louis, Mo.
 10:00 INTERMISSION (Installation of Officers)
 SYMPOSIUM ON DIAGNOSIS
 10:10 General Physical Examination
 E. L. Tuohy Duluth
 10:30 Intravenous Urography
 William F. Braasch Rochester
 10:45 The Value of X-ray Examination of the Chest
 W. H. Ude Minneapolis
 11:00 The Value of X-ray Examination of the
 Stomach and Gall Bladder
 H. M. Weber Rochester

11:15 Indications for Examination of the Colon
 E. L. Gardner Minneapolis
 11:30 Indications for Examination of the Genito-
 Urinary Tract
 F. E. B. Foley St. Paul
 11:45 Indications for Spinal Puncture
 H. W. Woltman Rochester
 Wednesday Afternoon, May 6

SYMPOSIUM ON THERAPY

1:30 Poliomyelitis
 J. C. McKinley Minneapolis
 1:45 Trichomonas Vaginalis Vaginitis
 R. J. Moe Duluth
 2:00 Appendicitis
 F. C. Scholdt St. Paul
 2:15 Salpingitis
 W. H. Rumpf, Jr. St. Cloud
 2:30 Empyema
 S. W. Harrington Rochester
 2:45 Sinus Infections
 E. R. Bray St. Paul

INTERMISSION

3:00 Complications and Results of Prostatectomy
 T. H. Sweetser Minneapolis
 3:30 Involutional Psychosis
 E. M. Hammes St. Paul
 3:45 Fracture of the Wrist
 C. A. Neumann Winona
 4:00 Fracture of the Hip
 A. R. Colvin St. Paul
 4:15 Fracture of the Humerus
 H. W. Meyerding Rochester
 4:30 Fracture of the Ankle
 J. S. Holbrook Mankato

MILLARD MONUMENT

Attention is called to the fact that the grave of Dr. Perry H. Millard in the Stillwater cemetery is entirely unmarked.

Dr. Millard's memory has been honored and perpetuated by the University of Minnesota itself in Millard Hall. It would seem fitting in view of Dr. Millard's outstanding services to the profession of medicine of the State and considering his long services as dean of the medical school that the medical alumni acknowledge these services by a small contribution for the erection of a suitable monument at his grave.

The undersigned committee requests that each medical alumnus of the University of Minnesota send his check for \$1.00 to Dr. J. T. Christison, Hamm Building, St. Paul, Minn., for the erection of a suitable monument.

There is no money available from Dr. Millard's estate for this purpose and the Legislature has declined to make appropriations for the same purpose. Your committee feels that in asking for a small contribution that no hardship will be caused anyone and that in honoring Dr. Millard's memory in this manner we honor the medical profession of the state.

N. O. Pearce, M.D., Minneapolis, Chairman,
 W. F. Braasch, M.D., Rochester,
 E. S. Boleyn, M.D., Stillwater,
 J. T. Christison, M.D., St. Paul,
 F. A. Erb, M.D., Minneapolis,
 E. L. Tuohy, M.D., Duluth,
 F. J. Savage, M.D., St. Paul.

OFFICIAL CALL TO THE OFFICERS AND MEMBERS OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION

The Fiftieth Annual Session of the South Dakota State Medical Association will be held in Aberdeen, South Dakota, Monday, June 1, to June 4, 1931.

The House of Delegates will convene on Monday, June 1, at 8:00 P. M., at the Alonzo Ward Hotel.

Scientific Program consisting of dry clinics in the morning and papers in the afternoon.

Delegates will procure credentials from the Secretary of their Society, and present same to the credential committee.

Each Councilor will make a report for his District as the By-Laws provide in Chapter VI, Section 2.

Delegates and committees having reports, resolutions or memorials to be considered by the House of Delegates will present the same in triplicate.

This is a Joint Meeting with North Dakota celebrating the Fiftieth Annual Session.

Faternally,

PERCY D. PEABODY, M. D., President,
Webster, S. D.

FRED TREON, M. D., Chairman of Council,
Chamberlain, S. D.

J. F. D. COOK, M. D., Secretary-Treasurer,
Langford, South Dakota, Langford, S. D.
April 15, 1931.

Headquarters: Alonzo Ward Hotel.

Registration and Scientific Sessions: Sacred Heart School Auditorium.

Exhibits, Scientific and Commercial: Sacred Heart School Basement.

Reporters: Master Reporting Company, Chicago, Illinois.

Program of the Fiftieth Annual Session of the South Dakota State Medical Association, Aberdeen, South Dakota, June 1, 2, 3 and 4, 1931

The Fiftieth Annual Session of the South Dakota State Medical Association will convene at Aberdeen, South Dakota, June 1, 2, 3 and 4, 1931. This being a Jubilee Session, the South Dakota State Medical Association invited North Dakota to join with South Dakota State Medical Association in celebrating the Fiftieth Annual Session of organized medicine in Dakota Territory. The Aberdeen District Medical Society invited the Joint Session to meet at Aberdeen.

A splendid program has been provided by the Joint Committee on scientific program. The forenoons will be given over to dry clinics. The afternoons to set papers. Scientific Session will be held Tuesday, Wednesday and Thursday; three full days of intense medical problems.

Those appearing on the program: J. C. Litzenberg, M. D., Minneapolis, Minn., Prof. Obst. and Gyn. University of Minnesota Medical School. Walter W. Hamburger, M. D., Chicago, Ill., Asst. Clin. Prof. Med. Rush Medical College. Emil S. Geist, M. D., Minneapolis, Minn., Assoc. Prof. Orth. Surgery, University of Minnesota Medical School. Andrew Carr, Sr., M. D., Minot, N. Dak., President North Dakota State Medical Association. Geo. M. Williamson, M. D., Grand Forks, N. Dak. William Boyd, M. D., Winnipeg, Ont., Canada, Prof. of Pathology, University of Manitoba Faculty of Medicine, Winnipeg. J. O. Arnson, M. D., Bismarck, N. Dak. William C. Nichols, M. D., Fargo, N. Dak. P. H. Burton, M. D., Fargo, N. Dak. Rae T. La Vake, M. D., Minneapolis, Minn., Asst. Prof. Obst. and Gyn.

Minn. 4. Joseph L. Miller, M. D., Chicago, Ill., Clinical Prof. Med. Rush Medical College. E. Starr Judd, M. D., Rochester, Minn., President Elect A. M. A., Prof. Surg. University Minnesota Post Graduate Medical School. Percy D. Peabody, M. D., Webster, S. Dak., President South Dakota State Medical Association. Rolfe Tainter, M. D., Fargo, N. Dak. Paul H. Rowe, M. D., Minot, N. Dak. Eric P. Quain, M. D., Bismarck, N. Dak. J. E. Countryman, M. D., Grafton, N. Dak. W. A. Fansler, M. D., Minneapolis, Minn. Henry E. Michelson, M. D., Minneapolis, Minn., Assoc. Prof. Derm. University of Minnesota Medical School. Jay A. Myers, M. D., Minneapolis, Minn., Assoc. Prof. in Med. University of Minnesota Medical School. Henry F. Helmholz, M. D., Rochester, Minn., Prof. Ped. University Minnesota Post Graduate Medical School. J. D. Graham, M. D., Devils Lake, N. Dak. Floyd O. Woodward, M. D., Jamestown, N. Dak. J. E. Hetherington, M. D., Grand Forks, N. Dak. Everett K. Gear, M. D., St. Paul, Minnesota.

The Local Committee of the Aberdeen District Medical Society has provided a very full program of entertainment. The smoker will be held Tuesday evening for the members of both Associations, and Wednesday evening the annual banquet followed by a dance at the Country Club. There will be an opportunity for playing golf and a golf tournament is being planned.

The Women's Auxiliary of the South Dakota Medical Association has planned three days of entertainment for the visiting Doctors' wives and sweethearts. It is anticipated that a National Auxiliary officer will be present to present the program of the National organization's activities for the State Auxiliary.

Various alumni associations will hold a reunion during the Session.

It is advisable that those anticipating attending this Session should make their hotel reservations at this time. A list of hotels with available space is notated for your convenience. Make your reservations early.

Sherman Hotel: About 75 rooms ranging from \$1.50 to \$3.50 single; \$2.50 to \$5.00 double.

Alonzo Ward Hotel: About 75 rooms, same price as Sherman.

Radisson Hotel: About 60 rooms ranging from \$1.00 to \$2.50 single; \$1.50 to \$3.50 double.

St. Niclas Hotel: About 18 to 20 rooms, \$1.00 to \$2.50 single; \$1.50 to \$3.50 double. These are good rooms and about one-half have baths.

Davis Hotel: About 15 rooms, \$1.00 to \$1.50 single; \$1.50 to \$2.00 double. These are all without bath, and the \$1.00 rooms are inside.

Wisconsin Hotel: About 15 rooms at \$1.00, no baths.

Y. M. C. A.: About 8 rooms at \$1.00 or \$3.25 for the week. These are fine rooms and have baths close by.

Chamber of Commerce will probably have 8 to 10 rooms.

If needed will be able to get rooms in one of the dormitories of the N. N. I. S.

The Chamber of Commerce are equipped to locate outside rooms and have tendered their assistance if we need them.

Secure your reservations early and let us know what time of the day you expect to arrive.

Committee on Hotels—R. G. Mayer, F. W. Freyburg, Aberdeen, S. D.

Langford, S. D. J. F. D. Cook,
Secretary-Treasurer,
South Dakota State Medical Association.

NEWS ITEMS

{ We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession. }

Twenty-two nurses will be graduated from St. Luke's Nurses' School at Fargo next month.

Dr. R. C. Murdy, Aberdeen, was married this month to Miss Arline Gillstrap of that city.

Dr. Frank R. Grawn, who has been in active practice for many years at Duluth, is now located at Northome, Minn.

Dr. George M. Sewall, formerly in practice in Minneapolis, died last month at Portland, Oregon. He was 56 years old.

Dr. G. K. Sellers, Minneapolis, has associated himself with Dr. G. A. Miners at Deer River, Minn., in general practice.

Dr. R. W. Giere, Minneapolis, has moved to Benson, Minn., and has become a partner of Dr. S. W. Giere, of that city.

Dr. Carl E. Johnson, Minneapolis, is now located at Cambridge, Minn., where he has purchased the practice of Dr. H. Rees.

Dr. M. A. Kiefer, a well known and highly esteemed physician of Sleepy Eye, Minn., died last month after an operation for appendicitis.

Twelve Minnesota doctors were among the 367 made Fellows of the American College of Physicians at the annual meeting recently held at Baltimore.

Dr. L. T. Lohrbaurer, Oaks, N. D., has sold his practice and moved to San Francisco, where he will be on the staff of the Leland Stanford hospital.

Dr. and Mrs. Arthur C. Strachauer, Minneapolis, have returned home from spending several months traveling in Europe, Africa, India and the Orient.

Dr. H. O. Collins, formerly a superintendent of the Minneapolis General Hospital, died last month at the age of 66 years at his home in Fresno, Calif.

Dr. Arne Oftedal, Fargo, well known among all North Dakota medical men, died suddenly on April 9th at his home in that city from an attack of pneumonia.

Dr. J. F. Quinn, formerly in practice at Humboldt, S. D., has opened an office at Bristol, where they have been without the service of a physician for the past year.

Dr. E. A. Meyerding, St. Paul, secretary of the Minnesota Public Health Association, has recently given many interesting talks over WCCO on "The Summer Roundup."

Dr. Ellis M. Harris, Minneapolis, a recent graduate of the University Medical School, has been appointed to the staff of the Staten Island General Hospital in New York.

Dr. G. M. Sewell, who founded the Cuyuna Range Hospital at Crosby, Minn., and was in active practice in that city for several years, died recently at his home in California.

Dr. J. M. Graybeal, who has been connected with the Western Montana Clinic at Missoula, Mont., for many years, has recently opened offices for general practice in that city.

Dr. Leo G. Rigler, head of the Department of Roentgenology of the University of Minnesota, was one of the speakers at the Sixth District Society meeting held at Bismarck, last week.

Dr. E. T. Bell of the University of Minnesota was elected vice president of the American Association of Pathologists and Bacteriologists at the annual meeting held at Cleveland, Ohio, this month.

Over fifty members of the Richland County, N. D., Medical Society were present at their last monthly meeting. A fine banquet was served, after which several interesting papers were presented.

Drs. Moses Barron, E. L. Gardner, H. L. Ulrich and S. Marx White were the Minneapolis Physicians that attended the annual meeting of the American College of Physicians at Baltimore last month.

Drs. Martin Norland, J. M. Hayes and J. F. McClendon, Minneapolis, were all on the program at the annual meeting of the American Association for the Study of Goiter, held at Kansas City this month.

Dr. D. Lemieux, Bowman, N. D., reports that in all of his 33 years of medical practice in that state, he has never seen so many cases of Bright's disease among young people as he finds at this season of the year.

Dr. B. W. Parrott, who has been in active practice at Long Prairie, Minn., for over thirty years,

died this month following an attack of pneumonia. Dr. Parrott was 61 years of age and a graduate of the University of Minnesota.

Dr. S. Marx White, Minneapolis, head of the Department of Medicine at the University of Minnesota for many years, was elected president of the American College of Physicians at the annual meeting held at Baltimore last month.

Dr. V. J. LaRose, Bismarck, was the principal speaker at the Cass County Medical Society meeting last month. Dr. LaRose's topic was "Hematuria, Its Significance," which was discussed by Drs. W. F. Baillie and Kent E. Darrow, Fargo.

Mrs. Sara Abbott White, wife of Dr. S. Marx White, Minneapolis, died last month at the age of 58 years. Mrs. White for many years has been an active worker in church and club activities, and will be sadly missed by a large circle of friends.

Dr. G. B. Weiser, the popular physician located at New Ulm, Minn., was recently presented with a beautiful desk set by the members of the military company of that city, in recognition of many years of free medical service as company physician.

Dr. Lawrence R. Boies has returned to Minneapolis after a two years' absence spent in special study at the Harvard Medical School and as Resident Physician at the Massachusetts Eye and Ear Infirmary. He is limiting his practice to diseases of the ear, nose, and throat.

Dr. H. O. McPheeters, Minneapolis, was recently the guest of the Ohio County Medical Society, Wheeling, West Virginia, at their regular monthly scientific meeting. Dr. McPheeters spoke on the "Injection Treatment of Varicose Veins" and followed his talk by a clinical demonstration.

The Aberdeen District Medical Society presented the following interesting program at their meeting last month, Dr. Owen King, Aberdeen, "Spinal Anesthesia," Dr. Frank H. Cooley, Redfield, "Trichomonas Vaginalis," Dr. Wm. H. Long, "Some Unusual Types of Hyperthyroidism."

About forty members of the Richmond, N. D., Medical Society were present at the meeting held in March at Breckenridge, Minn. A fine dinner was served, with Dr. C. T. Olson, Wyndmere, N. D., acting as toastmaster. Drs. S. R. Maxeiner

and W. D. White, Minneapolis, were present as guests and delivered two fine lectures.

At the last meeting of the Grand Forks District Medical Society held at Grand Forks, a symposium for the study of botulism, a deadly disease which caused the death of several persons in that state recently was discussed by Drs. C. J. Glaspel and C. J. Tompkins, Grafton, and Drs. H. E. French and A. K. Saiki, Grand Forks.

The regular monthly meeting of the Huron District Medical Society was held at Huron, S. D., on Thursday evening, April 9. Two papers were presented, one by Dr. C. A. Feige, Canovia, "The Relation of Focal Infection to Surgery," the other by Dr. B. H. Sprague, Huron, on "Surgical Problems of the Kiddies' Abdomen."

Dr. O. H. Clark, Newell, S. D., conceived the "Bee Hobby" a few years since, starting with only a half dozen stands, and doing most of the work himself after office hours, but the business has increased to where it requires the services of several extra men, three trucks, and the 700 stands of bees now produce over 100,000 pounds of honey annually.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). Speaker: Dr. William A. O'Brien, M. D., Associated Professor of Pathology and Preventative Medicine, Medical School, University of Minnesota. The program for the month of May will be as follows: May 6th—The Enuresis Problem. May 13th—Spring Tonics. May 20th—Botulism. May 27th—Bone Tumors.

Officers for the Third District Medical Society were recently elected at a meeting held in Madison, S. D., for the year 1931: Dr. J. R. Westaby, Madison, president; Dr. D. S. Baughman, Madison, vice president; Dr. M. Davidson, Brookings, secretary, with Dr. L. E. Jordan, Chester, Dr. H. A. Miller, Brookings, and Dr. R. S. Westaby, Madison, counsellors. The ladies' auxiliary also elected officers, choosing Mrs. B. T. Green, Brookings, president, Mrs. C. E. Sherwood, Madison, vice president, and Mrs. H. A. Miller, Brookings, secretary. Dr. D. S. Baughman was chosen by the doctors as official delegate from the district to the State Medical Association in Aberdeen.

**LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD
OF MEDICAL EXAMINERS, DECEMBER 2, 1930**

BY EXAMINATION
(October)

Name	School and Date of Graduation	Address
Allen, Raymond Bernard.....	U. of Minn., M.B. and M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Anderson, Freedolph E.....	U. of Minn., M.B., 1930.....	Swedish Hospital, Minneapolis, Minn.
Baker, Norman Hodgson.....	U. of Minn., M.B., 1928; M.D., 1929.....	Fergus Falls, Minn.
Berger, Edmund Henry.....	U. of Oregon, M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Bohl, George Washington.....	U. of Minn., M.D., 1929.....	Ada, Minn.
Brekke, Harvey John.....	U. of Minn., M.B., 1930.....	Ancker Hospital, St. Paul, Minn.
Brick, Enoch Berrisford.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Duluth, Minn.
Chapple, James Henry.....	U. of Minn., M.B., 1929; M.D., 1930.....	U. S. Veterans Hosp., Sheridan, Wyo.
Cilley, Earl I. L.....	U. of Mich., M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Evans, Vernon Lawrence.....	Loyola Univ., M.D., 1930.....	Mayo Clinic, Rochester, Minn.
Feuling, John Charles.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Duluth, Minn.
Ford, William Harold.....	U. of Minn., M.B., 1930.....	Ancker Hospital, St. Paul, Minn.
Frank, Joseph Emery.....	U. of Minn., M.B., 1930.....	3407 Pleasant Ave., Minneapolis, Minn.
Gillespie, James Bennett.....	U. of Iowa, M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Gilsdorf, Walter Henry.....	U. of Minn., M.B., 1929.....	General Hospital, Minneapolis, Minn.
Imes, Pat Ryan.....	U. of Louisville, M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Johnson, Victor Elias.....	U. of Minn., M.B., 1930.....	General Hospital, Minneapolis, Minn.
Jordan, Kathleen B. S.....	Western Reserve Univ., M.D., 1929.....	Granite Falls, Minn.
Kegaries, Donald Luther.....	Jefferson Med. Coll., M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Lang, Valorus Frederick.....	Northwestern Univ., M.B., 1929; M.D., 1930.....	Mayo Clinic, Rochester, Minn.
Larson, James Thelmer.....	U. of Minn., M.B., 1929.....	Lake Wilson, Minn.
Leckband, Norbert Frederick.....	Rush, M.D., 1930.....	Buhl, Minn.
Lee, Hubert Waldemar.....	U. of Minn., M.B., 1929; M.D., 1930.....	1115 St. Olaf Ave., Northfield, Minn.
McQuiston, James Stuart.....	U. of Pa., M.D., 1929.....	102 2nd Ave. S. W., Rochester, Minn.
Mass, Max.....	U. of Minn., M.B., 1929; M.D., 1930.....	739 Iglehart Ave., St. Paul, Minn.
Miller, John Carleton.....	U. of Minn., M.B., 1930.....	1604 10th Ave. S., Minneapolis, Minn.
Millet, Roscoe Frick.....	Northwestern Univ., M.B., 1929; M.D., 1930.....	Mayo Clinic, Rochester, Minn.
Myers, Frank Jay.....	U. of Cincinnati, M.B., 1928; M.D., 1929.....	Box 87, Green Springs, Ohio
Newell, Cecil Edward.....	U. of Virginia, M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Oliver, Irwin Lovette.....	U. of Illinois, M.D., 1930.....	Graceville, Minn.
Overton, Lewis Marvin.....	U. of Maryland, M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Owens, Clarence George.....	U. of Minn., M.B., 1929.....	General Hospital, Minneapolis, Minn.
Perlman, Everett C.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Minneapolis, Minn.
Pflaum, Clarence Carl.....	U. of Minn., M.B., 1929; M.D., 1930.....	1601 Main St. N. E., Minneapolis, Minn.
Pomeroy, Rex Kenneth.....	Indiana Univ., M.D., 1927.....	Mayo Clinic, Rochester, Minn.
Russ, Homer Harold.....	U. of Iowa, M.D., 1928.....	Blue Earth, Minn.
Rydburg, Wayne Chester.....	U. of Minn., M.B., 1930.....	Swedish Hospital, Minneapolis, Minn.
Scheldrup, Eugene Wittrup.....	U. of Iowa, M.D., 1929.....	1111 Nicollet Ave., Minneapolis, Minn.
Simons, John Brimhall.....	U. of Minn., M.B., 1929.....	Swanville, Minn.
Smith, Wyman.....	Northwestern Univ., M.B., 1930.....	328 E. Hennepin Ave., Minneapolis.
Stephenson, George Willoughby.....	U. of Pa., M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Stickney, Charlotte A.....	Columbia Univ., M.D., 1928.....	St. Cloud, Minn.
Stuck, Walter Goodloe.....	Washington Univ., M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Sukov, Marvin.....	U. of Minn., M.B., 1930.....	2500 6th St. S., Minneapolis, Minn.
Swenson, Rudolph Emil.....	U. of Minn., M.B., 1930.....	Cannon Falls, Minn.
Watson, James Rose.....	Harvard Univ., M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Wilkowske, Rudolph J.....	U. of Minn., M.B., 1930.....	Miller Hospital, St. Paul, Minn.

BY RECIPROCITY

Rixford, Emmet Lane.....	Stanford Univ., M.D., 1930.....	Mayo Clinic, Rochester, Minn.
Perrin, Stuart Henry.....	U. of Wis., M.D., 1928.....	Prior Lake, Minn.
Claydon, Howard Franklin.....	U. of Louisville, M.D., 1929.....	Zumbrota, Minn.
Fuller, Leland Stanford.....	Rush, M.D., 1928.....	Box 58, Virginia, Minn.
Olk, Howard James.....	St. Louis Univ., M.D., 1928.....	St. Paul Clinic Bldg., St. Paul, Minn.
Gully, Raymond Jacob.....	Creighton Univ., M.D., 1929.....	St. Peter, Minn.

NATIONAL BOARD CERTIFICATION

Johnson, Youbert Theodore.....	U. of Minn., M.B., 1928; M.D., 1929.....	26 W. Lake St., Minneapolis, Minn.
Kilroe, John Charles.....	Columbia Univ., M.D., 1926.....	Mayo Clinic, Rochester, Minn.
Scott, Eugene Edward.....	U. of Mich., M.D., 1928.....	Hotel Lowry, St. Paul, Minn.
Selby, Keith E.....	Northwestern Univ., M.D., 1930.....	Cook Co. Hospital, Chicago, Ill.
Younger, Lewis Irving.....	Northwestern Univ., M.D., 1930.....	61 W. 4th St., Winona, Minn.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS, MARCH 3, 1931

BY EXAMINATION
(January)

Name	School and Date of Graduation	Address
Alderson, Lee Richard.....	U. of Minn., M.B., 1929; M.D., 1930.....	29 Sidney Place S. E., Minneapolis
Boudry, Marshall Ovid.....	U. of Ill., M.D., 1930.....	Irwin Apts. No. 28, Rochester, Minn.
Brav, Ernest Allan.....	U. of Pa., M.D., 1927.....	512 4th St. S. W., Rochester, Minn.
Byram, James Waldamor.....	U. of Minn., M.B., 1930.....	Fairview Hospital, Minneapolis, Minn.
Cabot, Clyde Marcus.....	U. of Minn., M.B., 1930.....	University Hospital, Minneapolis, Minn.
Cabot, Hugh.....	Harvard, M.D., 1898.....	Mayo Clinic, Rochester, Minn.
Craddock, William Henry.....	U. of Minn., M.B., 1928; M.D., 1929.....	1008 1st St. S. W., Rochester, Minn.
Duryea, Willis Mortimer.....	U. of Minn., M.B., 1930.....	390 Beacon St., St. Paul, Minn.
Halpern, David Joseph.....	U. of Minn., M.B., 1930.....	University Hospital, Minneapolis, Minn.
Heazlett, William Alexander.....	U. of Pittsburgh, M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Johnson, Rudolph Edwin.....	U. of Minn., M.B., 1930.....	Swedish Hospital, Minneapolis, Minn.
Jolin, Francis Milton.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Duluth, Minn.
Kaplan, David Hyman.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Duluth, Minn.
Koucky, Rudolph Welton.....	U. of Buffalo, M.D., 1929.....	University Hospital, Minneapolis, Minn.
Kuske, Albert W.....	U. of Minn., M.B., 1930.....	General Hospital, Minneapolis, Minn.
Levin, Alfred G.....	U. of Minn., M.B., 1929; M.D., 1930.....	1517 Portland Ave., St. Paul, Minn.
Loenholdt, Erich.....	U. of Minn., M.B., 1930.....	General Hospital, Minneapolis, Minn.
Macklin, William Edward, Jr.....	U. of Minn., M.B., 1929; M.D., 1930.....	4348 Aldrich Ave. S., Minneapolis, Minn.
Marren, John Joseph.....	U. of Minn., M.B., 1930.....	General Hospital, Minneapolis, Minn.
Massey, Ben Davis.....	Johns Hopkins, M.D., 1928.....	1301 1st St., Rochester, Minn.
Mercer, Samuel Robertson.....	U. of Pittsburgh, M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Meyer, Frederick Carl.....	U. of Minn., M.B., 1930.....	Miller Hospital, St. Paul, Minn.
Moss, John George.....	U. of Minn., M.B., 1929; M.D., 1930.....	Children's Hospital, Milwaukee, Wis.
Mulligan, Victor Allen.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Duluth, Minn.
Pattee, George Lucerne.....	U. of Mich., M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Rogin, James Robert.....	U. of Mich., M.D., 1929.....	718 S. W. 5th St., Rochester, Minn.
Ross, William Percival.....	U. of Manitoba, M.D., 1923.....	Southwestern Minnesota San., Worthington, Minn.
Samuelson, Leopold Gordon.....	U. of Minn., M.B., 1930.....	University Hospital, Minneapolis, Minn.
Samuelson, Samuel.....	U. of Minn., M.B., 1930.....	Swedish Hospital, Minneapolis, Minn.
Scott, Horace Golden.....	U. of Minn., M.B., 1928; M.D., 1929.....	2305 Aldrich Ave. S., Minneapolis, Minn.
Sprague, Percy Harry.....	U. of Alberta, M.D., 1927.....	Mayo Clinic, Rochester, Minn.
Waller, Lorenz McBurney.....	U. of Pa., M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Wilkerson, Vernon Alexander.....	U. of Iowa, M.D., 1925.....	3935 4th Ave. S., Minneapolis, Minn.
Wilkinson, Everett A.....	Northwestern, M.D., 1929.....	1301 1st St. S. W., Rochester, Minn.

BY RECIPROCITY

Gibson, James Knox.....	U. of Pa., M.D., 1926.....	217½ S. Broadway, Rochester, Minn.
Grundset, Ole J.....	Coll. Med. Evangelists, Loma Linda, Calif., M.D., 1927.....	Excelsior, Minn.
Mills, Nathaniel.....	Johns Hopkins, M.D., 1912.....	Sivertsen Clinic, 6th St. and 24th Ave., Minneapolis, Minn.
Noble, John Franklin.....	U. of Pittsburgh, M.D., 1919.....	Ancker Hospital, St. Paul, Minn.

REACTION OF CONTENT OF GASTRO- INTESTINAL TRACT

Frank C. Mann and Jesse L. Bollman, Rochester, Minn. (Journal A. M. A., Dec. 6, 1930), have developed a method for repeatedly securing, under normal physiologic conditions, specimens of the gastro-intestinal content at various levels of the tract. Estimation of the acidity in the fasting animal showed that the gastric juices are usually strongly acid, ph. 1.5 to 2.0 but may be at times almost neutral. The content of the duodenum, jejunum, ileum and colon is usually found to be alkaline, ph. 7.0 to 8.0, with the exception that the content of the duodenum may be found to be acid when

highly acid values are found in the content of the stomach. Following a meal, the acidity of the content of the gastro-intestinal tract depends largely on the development of acid in the stomach. Short periods of high acidity of content are common in the duodenum and less common in the small intestine, the greater the distance from the pylorus. The usual reaction in the small intestine, after a meal, is close to neutrality, ph. 6.5 to 7.5. The content of the colon is usually slightly alkaline but may be slightly acid, especially following a meal rich in carbohydrate. Dietary measures may greatly alter the acidity of the content of the gastro-intestinal tract.

BOOK NOTICES

TEXT-BOOK OF GYNECOLOGY. By Arthur H. Curtis, M. D., Philadelphia, W. B. Saunders Co., 1930. Cloth, \$5.00. 380 pages with 222 original illustrations.

It is unusual to find a new text-book not built on the lines of "Bigger and Better Elephants." Curtis has and enjoy. The food is concentrated but digestible. The author has written mainly from personal experience so that both the general practitioner and gynecologist will find this volume instructive.

The discussions of radium therapy, sterility and anaesthesia are especially good. The importance of endometriosis and stricture of the cervix are emphasized. He stresses the principle of "Adequate support without rigidity" in pelvic surgery.

Tom Jones and Mary Dixon have produced admirable illustrations. The plates showing operative procedures are clear and complete.

Variations of diagnostic procedures and of operative techniques are a part of the personality of every experienced surgeon. The author has expressed his practice and teaching in a straightforward, concise and common sense manner.

The book is a distinct addition to the library of Gynecological text-books.

—H. M. N. WYNNE, M. D.

CLASSIFIED ADVERTISEMENTS

For Sale

Complete set of Surgical and Medical instruments and office equipment for sale at a sacrifice to close estate of the late Dr. John Lyng. Particularly suitable for hospital use. Phone Dupont 8948 or address 5145 Woodlawn Avenue, Minneapolis, Minn.

For Sale

Lease of office, 516 La Salle Building, and complete office and X-ray equipment of the late Dr. H. N. Meleck, including good will and referred work from six industrial and insurance firms. Office may be inspected any time during the day. Telephone, Geneva 5592.

Local Tenens Wanted

Locum Tenens or assistantship to busy general practitioner wanted by recent graduate of University of Minnesota. 32 years old, experienced in general practice and industrial surgery. Address Box 811, care of this office.

For Sale

Doctor's office occupied by prominent physician. Office elegantly equipped. Individual treatment room, laboratory, etc. Reception room is shared with dentist and other physician. A new up-to-the-minute medical building, located in one of best business intersections of good residential district. This is an unusual proposition and must be seen to be fully appreciated. Address Box 810, care of this office.

For Sale

All furniture and equipment for a modern seven room Hospital. In splendid condition. A real bargain, if interested. Address Box 809, care of this office.

For Sale

In Minnesota town of 2500, rich German community, on Jefferson and coast to coast highways. Well established practice, five bed hospital, residence combined, well equipped office. Will consider partner with small investment, or sell at sacrifice a \$15,000 year cash practice. Reason, poor health. Address Box 814, care of this office.

Location or Locum Tenens Wanted

Wanted an unopposed general practice in Minnesota or South Dakota town by qualified physician. Would consider locum tenens in either state. Address A. A. C., 827 University Ave. S. E., Minneapolis, Minn.

For Sale

Physician and surgeon established in Minneapolis 18 years, with office in Medical Arts Building. Recently became totally incapacitated from performing any of the duties of profession. Offering office with equipment to any physician and surgeon willing to take same over for a small consideration for equipment only. This is a very good opportunity for a general practitioner capable of doing surgery. Should have from 5 to 10 years' experience. Address box 816, care of this office.

Registered Nurse—Laboratory Technologist

Graduate experienced nurse of a Minneapolis Hospital with a post graduate course in medical technology, X-ray and physio-therapy, wishes position in hospital clinic or doctor's office. Able to do stenographic work. Good references. Address box 817, care of this office.

For Sale

Small rural hospital all modern, worth \$25,000, will sacrifice for \$16,000. Instruments and equipment included. \$5,000 cash and balance on time at 6 per cent. Address box 818, care of this office.

Excellent Practice For Sale

Complete office equipment in town of 2,700 in Southern Minnesota. Nationalities mixed. Collections very good. Practice has been established 24 years. Reason for selling—death. Address box 819, care of this office.

For Rent

Splendid opening for young doctor or for doctor contemplating moving into city in new office on busy intersection. Waiting room is shared with busy, established dentist. Equipment is all brand new of 1931 design. Rent reasonable. Competition in neighborhood light. For particulars address box 820, care of this office.

THE JOURNAL-LANCET

Represents the Medical Profession of
Minnesota, North Dakota, South Dakota, and Montana

The Official Journal of the
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EXTENSION TREATMENT FOR FRACTURES OF THE FINGERS

BY B. S. ADAMS, M.D.
HIBBING, MINNESOTA

The treatment of simple fractures of the phalanges without axial displacement is usually easy; a tongue blade for two or three weeks, followed by active motion, heat, and massage. But when we have a fractured phalanx with displacement we have a major fracture to treat, and if it be compound, as a very large per cent are, we have a serious injury to care for. In the past various splints were used, both anterior, posterior, and encircling; the fingers were bent over a bandage roll, tin splints were applied, and various other appliances, and the result was usually a crooked finger with marked loss of function, which was all too often of but little use. Then the wire splint for extension that rested on the webs of the adjoining fingers was tried, and the patient tried to be patient and endure the pain, until his patience gave out and he refused to endure the torture any longer. I have never been able to get satisfactory results with a wire extension splint riding on the webs between the fingers like a saddle.

Extension treatment for fractures of the phalangeal bones, however, is just as important as is extension for a fractured femur, and for many trades and occupations more so. Extension treatment properly applied is the most comfortable splint for the patient and also gives the best results. In compound fractures it possesses the great advantage of allowing dressings to be changed without mobilizing the fragments, a

most important point in any compound fracture. Complete rest of the parts and freedom from any motion in the broken bone is especially important in case a compound fracture becomes infected.

Extension is best applied with the banjo splint or the wire loop described by Dr. Lorenz Böhler, of Vienna. The banjo splint is made by applying a circular plaster wristlet over the well padded wrist and base of the hand. The hand should be in cock-up position, that is dorsally flexed or hyperextended, with the plaster wristlet extending onto the hand far enough to prevent its slipping up towards the elbow. The two free ends of an iron wire loop are incorporated in each side of the plaster wristlet; this wire loop must be long enough to extend along each side of the hand and fingers and beyond the fingers for three or four inches. Extension may then be made by fastening a strap of adhesive plaster or moleskin to each side of the broken finger, from the site of fracture to its tip, with Heussner's glue, which is made as follows:

A. Resin powder, 50 grm., Alcohol 50 grm.
B. Benzine 25 grm., Venice turpentine 25 grm.
Mix A and B.

A rubber band one-eighth to one-fourth inch wide can then be attached to the straps at one end and to the extension wire at the other end. If several fingers are broken, each can be attached to the same wire loop. If the fracture be com-

pound, it may be difficult or impossible to use straps on the fingers; in such cases a hole may be drilled through the end of the finger nail, and a silk thread run through this hole and attached to the rubber band. Or if necessary a hole may be drilled through the end of the distal phalanx and a cambric needle passed through the bone and extension attached to this. The banjo splint is especially useful where several fingers are broken. In case of a fracture of the thumb the wires may be bent laterally to give the necessary direct extension.

The Böhler splint is a very useful form of extension where straight extension does not over-



volar plaster wrist splint. These two plaster molded splints are held in place on the dorsal and volar sides of the wrist by a circular bandage. The long U shaped extension wire is wrapped with bandage. A fine rustless wire is passed through the distal end of the distal phalanx, passed around the ends of a short divider stick to keep them separated, and fastened to the end of the extension wire. The fractured finger together with the extension wire is then flexed at each finger joint about 45 degrees; in this way the distal fragment is made to point in the same direction as the proximal fragment, and the extension plus the wire splint holds the position. The radius of the curve of the wire extension splint should be a little shorter than that of the bent finger. This makes a very satisfactory splint, its being partly flexed being a decided advantage both in holding the bones in good position and in later reestablishing motion. Böhler leaves this splint on three to four weeks. Böhler used local anesthesia for reducing nearly all fractures; in some special cases he uses regional or spinal anesthesia. In finger fractures local anesthesia is certainly very satisfactory. By injecting ten c.c. of two per cent novocaine directly into the site of the fracture, very satisfactory anesthesia is produced and good relaxation.

A compound fracture must be cleaned out very carefully, débridement done, and I prefer to use tincture of iodine quite freely in the wound; if possible the skin edges should then be approximated with sutures. In case a tendon is cut, one's best judgment must be used as to whether to do a tendon suture at once or wait until later. If the injury is in the nature of a cut rather than a crushing bruise, immediate suture gives fair promise of success; but if the damage has been done by a crushing injury likely to be followed by considerable sloughing, it probably will be wiser to wait and do a tendon repair after the open wound is healed, or at least until after danger of further sloughing and of infection is passed.

In severe crushing injuries of the finger where there is a question as to whether a useful finger can be saved or not, I believe we should be conservative; if there is any reasonable possibility of saving a finger, the attempt should be made; in the case of injury to a thumb it is even more important to save all or as much as is possible than in the case of a finger. Even a stiff thumb is usually far better than a stump. Should gangrene develop it is very easy to amputate later on. On the other hand it is often surprising what a useful digit results from an apparently hopeless injury.

come the displacement. With the wrist in slight dorsiflexion he applies a dorsal plaster splint. He then applies a wire finger splint made of soft pliable iron wire about two mm. diameter, twelve gauge, bent in the middle to form a long narrow U about thirteen inches long; the free ends of this wire are each bent to a right angle about an inch from the end, and then incorporated in a

CONGENITAL ATRESIA OF THE ESOPHAGUS

By W. A. WRIGHT, M.D.

and

L. B. DOCHTERMAN, M.D.

WILLISTON, NORTH DAKOTA

This condition was first described by Durston, in 1670, and in 1679 Thomas Gibson (1) published the first case report. Plass (2) made an extensive review of the literature in 1917 and found 204 cases reported. Reynolds and Morrison (3) in 1921, while reporting the first case seen in Bellevue hospital for sixteen years, collected 214 cases. The latest reports which we have been able to find are those of Holderman (4) and Broyles (5). Holderman placed the total at 218, Broyles case made 219. The case which we have to report is probably the 220th.

Congenital anomalies of the esophagus are usually incompatible with life, and hence are mainly of interest from the point of view of diagnosis and prognosis. Whipham and Fagge (6) classify them as follows:

A. An absence of the whole esophagus, very rare.

B. A bifurcation with junction of the two portions at the lower end.

C. (1)—Congenital atresia, in which the esophagus is divided into two parts, the upper portion ending in a blind cul-de-sac, while the lower portion is connected with the trachea or bronchi. Approximately 75 per cent of cases are of this type.

C. (2)—Both ends of the esophagus end blind and are connected by a fibrous cord.

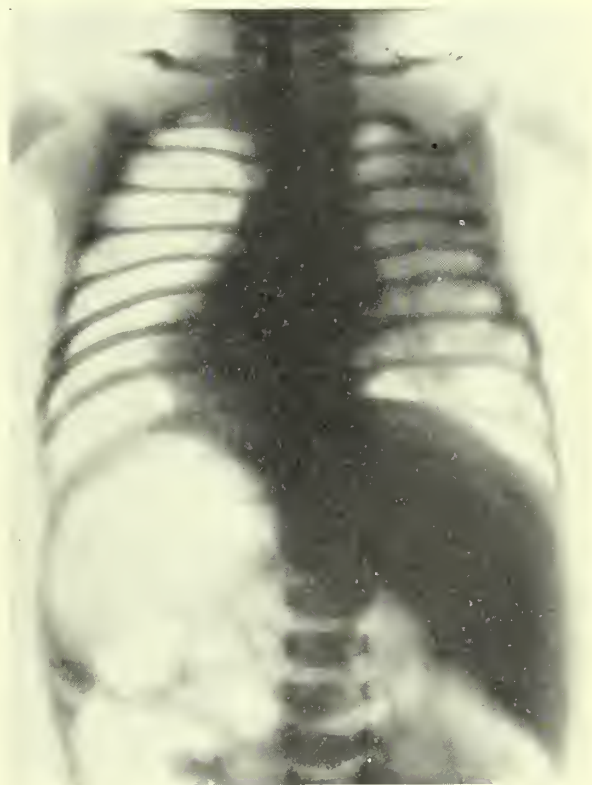
D. A stricture of the esophagus by a fold of mucous membrane projecting into the lumen, usually near upper or lower end.

E. Congenital stenosis of the lower end.

These conditions occur as a result of some developmental error and depend upon the fact that the pharynx, trachea and upper portion of the alimentary canal have a common origin being derived from the foregut. The foregut is formed along with the mid and hind guts by an infolding of hypoblastic tissue extending from one end of the embryo to the other just below the primitive vertebral column. The middle portion of the foregut dilates to form the stomach, which then undergoes axial rotation to the right. The upper portion continues as a straight tube, from the ventral portion of which the trachea is formed.

First there is a pouching of the ventral wall, which gradually deepens, the edges come together and fuse forming a tube separate from the esophagus.

The symptoms are characteristic and a diagnosis may be easily established. The child may dribble mucus and saliva, and fluid ingested is soon regurgitated through the mouth and nostril. At this time the child may choke and become deeply cyanosed. Tracheo-esophageal fistula may be clinically diagnosed by observing the stomach



balloon up with air on each inspiration. Auscultation over the stomach reveals distinct bronchial breathing and an X-ray shows the stomach and intestines full of air. Attempts to pass a catheter or bougie into the stomach are unsuccessful, and the site of the obstruction may be demonstrated by an X-ray.

Treatment is hopeless except in the cases of types D and E, when dilatation through an esophagoscope, with or without gastrostomy, may be effective. In the other types gastrostomy has been done in many cases. Richter (7) has devised and performed in two cases, an operation consisting of gastrostomy combined with an intrathoracic ligation of the lower esophagus. In no case has an infant survived more than a few days.

Case report. Baby A, born on June 7, 1930, normal delivery. The baby was quite cyanotic and large amounts of mucus literally poured from the nose and throat. Oxygen inhalations were given for some time after birth. On being given water either by bottle or dropper, it was very promptly regurgitated through the mouth

and nostrils. At such times the baby became quite cyanotic and appeared to be choking. Subcutaneous and intraperitoneal glucose and saline were given.

Examination revealed a distended upper abdomen which gave a tympanitic percussion note. There was a sulcus at the costal margin, more noticeable on inspiration when the abdominal distension was increased. Blowing breathing could be plainly heard all over the upper abdomen.

Attempts were made to pass catheters, bougies, and ureteral catheters, but all were obstructed at a point 10 cm. from the lips. A catheter could be passed through the trachea to the level of the bifurcation of the bronchi. X-ray examination showed the catheter in the esophagus to be obstructed at the level of the third rib. It also demonstrated the presence of air in the stomach and intestines. A diagnosis of congenital obstruction of the esophagus with tracheo-esophageal fistula was made and the child died on the eighth day.

At autopsy the stomach, trachea, esophagus, lungs, and heart were removed en bloc and the heart and lungs dissected away. As is shown in the accompanying illustration, a catheter passed into the proximal opening of the esophagus ends in a blind pouch 4 cm. below the level of the thyroid cartilage. It was impossible to find any communication between the trachea or the stomach and the proximal portion of the esophagus. A catheter inserted through the pylorus to the cardia passed easily through the distal end of the esophagus into the trachea at its lowest level and out through the larynx.

No other abnormalities were noted at the autopsy.

COMMENT

1. This is a report of a case of the most common type of congenital atresia of the esophagus.
2. The diagnosis of tracheo-esophageal fistula may be made by auscultation and X-ray of the abdomen.
3. Treatment is hopeless.

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NEW TREND IN THE DIET OF INFANTS

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The diet of infants has undergone many changes during the past decade. Men have wandered from one extreme to the other. On the one hand, we had the physician who limited the infant to breast milk or cow's milk mixtures. On the other hand, we have the physician who allows any food as long as the total caloric requirements are fulfilled. With increasing knowledge of the actual composition and the ease of assimilation of various foods, there has come about a saner, more rational approach to this important problem. Empiricism and prejudice are gradually giving way before exact scientific facts.

The importance of the banana in an infant's diet is still to be generally recognized. An inherent prejudice on the part of the mother and often on the part of the physician precludes its proper introduction as a part of the just dietary of infancy. Recent observations, both experimental and clinical, tend to show that the banana is an excellent and economical source of nourishment.

Many years ago, Myers and Rose¹ found that in a fully ripe banana, the starch is almost completely changed to sugar and is well absorbed from the intestines. Because of its low protein content and alkaline ash they concluded that "the banana would appear to be a particularly valuable food to employ in the dietetic treatment of nephritic patients with nitrogen retention."

However, it was not until 1924, when Haas² pointed out the value of this fruit in the treatment of celiac disease that recognition became more universal. Haas treated eight cases of celiac disease with a diet containing a considerable number of bananas daily. His results were very favorable. They were soon confirmed by the reports of Irish³, Stross⁴, Johnston⁵ and many others.

In 1928, Gruninger⁶, in an extensive study with guinea pigs, showed that a ripe banana not only prevented scurvy but healed scurvy when it was present. He also found that the antirachitic factor was contained in this fruit in very small amounts.

Thursfield⁷ fed bananas to four cases of true marasmus and two "ruminators." All gained in weight, after the repeated failures of other diets. He thinks that the beneficial result is "due to some unidentified element in the banana because

the sugars of this fruit are the common maltose and glucose."

Johnston⁵ has fed ripe bananas to babies as young as six weeks. There was no evidence of distress or intolerance.

In 1928, von Meysenbug⁸ reported his results in 140 babies. He obtained beneficial effects in a case of scurvy, a case of celiac disease and three cases of hemorrhagic nephritis. The banana was introduced into the routine feeding of his infants. He found it might be given as early as the fourth month of life.

Scriver and Ross⁹ studied 58 infants, varying in age from three months to two years, over a period of twelve to fifty-two weeks. Equivalent amounts of ripe banana were substituted for cereals or potato. They concluded that it could be added, without any injurious effect, to the diet of a three month's infant. They also found that it may be used as a substitute for sugar.

According to the U. S. Department of Agriculture¹⁰, the banana has the following average chemical composition: protein 1.3 per cent, fat 0.6 per cent, carbohydrate 22 per cent. The food value averages 460 calories per pound. This is a higher caloric value per pound than that of any other fruit on the market. The starch is gradually converted into the simple sugars. These sugars, maltose or glucose, are easily digested. The vitamin content is subject apparently to wide variation.¹¹ Some observers have found abundant vitamin content, others have found it to be poor.¹²

We have used ripe banana in our diets for babies and children for the past three years. The ripe pulp is mashed up, forced through a fine sieve or coarse muslin, and introduced into the milk formula. An egg beater may be used to advantage. It may be fed with a spoon, independent of the milk formula. It has been our experience that it is well tolerated as early as the third month.

We have used it with apparent success as an antiscorbutic to replace orange juice. Oranges are not always in season, vary a great deal in price, and are frequently not well tolerated by infants. The protein in orange juice may occasionally be the cause of facial eczema. Removal of the offending protein and the substitution of

banana pulp may effect a complete cure. Babies take this food very willingly and are apparently able to digest and assimilate a surprising amount of it.

The use of eggs in the diet of infants is also subject to a great deal of prejudice and misapprehension. Animal experiments with raw, soft-boiled and hard boiled eggs are very interesting and instructive. In 1926, Friedberger¹³ published the results of an extensive investigation on the food value of eggs. He concluded that raw eggs, both the white and the yolk, are excellent nutritional substances. He found though that a diet consisting exclusively of boiled eggs caused marked trophic changes in his rats, with a terminal result at the end of four to six weeks. In a later communication, he reported that rats fed exclusively on raw eggs also showed the same findings, but to a much less marked degree. Others showed end results diametrically opposed to those of Friedberger. They all found that raw eggs were less valuable than hard boiled ones. Cooking did not hurt the nutritional value of the hen's egg. It did hinder the poisonous properties of the raw egg. Abderhalden and Pettibone¹⁰ had demonstrated back in 1912, in experiments *in vitro*, that coagulated egg white is more easily digested than raw egg white. Bateman²⁰, in 1916, showed that raw egg white in large amounts caused marked gastro intestinal disturbances in dogs, rabbits and rats. Raw egg yolk and cooked egg yolk were well tolerated. Raw egg white is therefore apparently injurious if it forms a major portion of a diet.

Clinical observations, under exact scientific conditions, are very valuable. Rose and McLeod²¹ have reported their results in ten young women who were given ten to twelve egg whites daily, either raw or cooked, in a mixed diet. They found the average coefficient of digestibility for raw egg white was 80 per cent, and for cooked egg white 86 per cent.

In 1926, Rose²² showed that the addition of an egg a day to the average childhood diet, resulted in a marked improvement in the general health of these children. The hemoglobin and red cell count showed increased values.

Hess²³ has stressed the therapeutic value of an egg yolk in rickets. By adding one raw egg yolk to the infants' milk mixtures he was able to protect them from rickets as judged by clinical, Roentgenologic and chemical criteria. In his recent classical book on rickets²⁴ he makes the following statement: "The only food which is of service in the prevention of rickets is yolk of egg. Babies under two months of age may be given one-half a yolk of raw egg, and older infants an

entire yolk incorporated in the daily quota of milk. Egg yolk is not as potent as cod liver oil and therefore will often fail to afford complete protection. It possesses the advantage of being well taken, of adding to the caloric value of the diet, and of furnishing the fat soluble factor in large amount. I have used it satisfactorily in the clinic and in private practice for the past five years."

If one bears in mind that the young chick gets all its nourishment from the egg yolk, it is not surprising to find it such a valuable food. All the ingredients essential for the proper development of the chick embryo must necessarily be present in the yolk of the hen's egg. It must contain all the mineral salts, and all the vitamins required for growth. The protein in the egg yolk averages about 15.7 per cent. The fat content is 33.3 per cent. It is present in a fine, emulsified form and is as easy to digest as the fat in milk. Its vitamin content is exceptionally high, especially in the A and D factors. The food value per egg is about 75 calories. According to McLester¹², egg yolk ranks next to milk as a suitable food for the growing infant.

It is of interest to note that egg yolk is rich in iron. The yolk contains 8.6 milligrams of iron per 100 grams of fresh substance. Spinach, given largely for its iron content, contains only 3.6 milligrams per 100 grams of fresh substance. The iron is in a form readily utilized by the body. Egg yolk is easily given to the infant, while spinach is poorly taken by a considerable proportion of these patients.

One of the most interesting clinical reports is that of Miller and his collaborators. In order to determine the response of the normal human stomach to eggs, they carried out a series of over 90 experiments on 18 different individuals. They found that raw eggs produced less stimulation of acid secretion than boiled eggs and remained longer in the stomach. **Fried eggs were digested** as readily as any cooked egg, and gave no more trouble than any other form of egg. Poached egg and soft boiled egg were the most readily digested forms. Cold storage eggs, whether boiled or fried, could not be distinguished from fresh eggs as far as the response of the stomach was concerned. We have given raw and hard boiled egg yolks indiscriminately to our private patients for the past three years. Our results have been very satisfactory. Even babies with eczema have tolerated the yolk. Unlike egg white, the yolk is apparently free from any anaphylactic reaction. We have two cases of celiac disease that have been on a diet of bananas, hard boiled egg yolks and certain vegetables for the past two to three

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REPORT OF A CASE OF PULMONARY BLASTOMYCOSIS WITH RECOVERY

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BLASTOMYCOSIS

Yeast like Fungi, free, oval, rounded cells, may be budding or not. Morphologically, in the lesions two principal types of yeast like fungi may be distinguished: (A) the blastomycetoid, in which the cells are large, and have a double contour very well marked. There are granules in the protoplasm. (B) the cryptococcoid type, in which the cells are small, the double contour being absent or less marked. The protoplasmic granules smaller.

It is not my intention to go into the various divisions of the blastomycoides. They are too multiple to be of interest here.

Infection by the yeast fungus usually appears on the skin or mucous membranes, and goes to other structures. Systemic metastases from the skin to other structures are usually fatal, 90 per cent being fatal, according to some authors.

Blumer, "Bedside Diagnosis" gives the following definition: "Blastomycosis is a chronic, infectious disease caused by a budding, yeast like fungus. It is usually limited to the skin, but occasionally it may become generalized and affect any organ or tissue of the body." It is most common in the neighborhood of Chicago, but though rare has a wide distribution both here and abroad. The type in this country is the Gilchrist type which grows in culture by gemmation (budding) and mycelial formation. The fungus is found in the pus from the abscesses where it occurs as round or oval yeast like cells.

Nothing is known concerning the life of the fungus outside the human body, but since contagion from man to man is rarely seen, it is probably capable of a saprophytic existence.

Stober was able to find moulds resembling blastomycetes in the living quarters of patients suffering from the systemic form of the disease, where there was sufficient dampness and filth to encourage the growth of moulds. In systemic blastomycosis the primary infection is usually in the lungs. Obstinate colds with cough and perhaps pain in the chest are complained of. Dissemination to other organs and tissues of the body occurs early. A chronic cough with mucopurulent sputum, often blood streaked, is present. There is usually moderate fever, rapid pulse, and a certain amount of emaciation and

weakness. The lungs show the physical signs of consolidation, rarely of cavity formation, and there may be evidence of pleuritis and pericarditis.

Cutaneous involvement occurs in about 90 per cent of the cases. There may be crops of pustules, small abscesses, nodules and ulcers. The abscesses may be superficial or deep, and have their origin in the skin, subcutaneous tissues, muscles, bones or viscera.

Bone involvement occurs in 60 per cent of the cases. Lesions have been found in all, the internal viscera as well as the tonsils, tongue, esophagus, epididymis, and testicle.

The lymph glands are not usually implicated and the spleen is not necessarily enlarged.

The blood shows a moderate leucocytosis.

The blastomycetes are found in the pus and sputum and have been recovered from the blood, urine and feces.

Systemic blastomycosis, in its early stages, with initial involvement of the lungs, has no distinguishing features, but usually resembles one of the common acute or subacute respiratory infections. Later the general picture becomes that of tuberculosis, and a diagnosis of this disease is most likely to be made, unless the fungus is accidentally found in routine sputum examinations. With the appearance of skin abscesses the pus and sputum should be searched for the organism.

Patient: L. F. D., age 50, male, married, occupation, assistant branch manager of a large corporation.

Chief complaint, pain in chest.

Past history: Except for colds has been quite well for 25 years. Had pneumonia in 1925, with a phlebitis of left leg. For some time he was under a severe business strain and became much run down. It was reported he had had hypertension for some time previous to his present illness. This was probably due to his business stress.

Present Illness: Early in 1927 he went to California for a rest. On the way out West he took cold and developed a dry pleurisy in the right lower chest and a streptococcus sore throat. He returned to Minneapolis April 4th. He went to work for a few days, but the week

before I saw him he became more ill and remained at home. About April 16th, he developed fever, cough, and considerable pain in the right lower chest.

April 18, 1927, Examination: T., 99.4; P., 108; R., 24. Well nourished, well developed man. Facies: flushed, worried, and expressing pain. Tongue: coated. Throat: red. Nose: catarrhal discharge. Hair, skin, eyes, ears, teeth, neck, glands, extremities, all normal. There was no edema present. Heart, normal in size and good tone; no murmurs present. Blood pressure, 132-96. Abdomen, negative for pathology. Liver and spleen normal. Nervous system, normal. Chest and lungs: well developed chest, no retractions. Breathing restricted on left side. Tactile fremitus increased in left upper chest with harsh breathing in this region.

By evening he complained of pleuritic pain in the left lower chest. Harsh breathing was also developing in this region. Leucocytes, 16,700 at this time.

On the next day, April 19, he had a definite broncho-pneumonia and dry pleurisy at both bases.

April 20th: At 9:00 A. M. general condition about the same. T., 101.4°; P., 108; R., 24. About the middle of the morning, while douching his nose, he developed a sudden weak spell. His pulse became 132 and he looked pale and worried. At this time he complained of pain in the upper right chest.

At 1:30 P. M., pulse 128. Temperature went up to 102.8°. Respirations, 28. He was weak; color a little better. Later in the afternoon he had a sweat and began to feel better. By 6:00 P. M. his pulse was 108, temperature, 101.8°. At 10:00 P. M., about the same.

Laboratory reports: Sputum: The character of the sputum was not prune juice, but much red blood was present and often chunks of blood clots.

On April 20, the laboratory report was as follows: Sputum thick; much blood present; many pus cells present. Yeast like organisms very numerous. There are a few Gram positive bacilli.

Culture from sputum: Yeast organism predominating; many large Gram positive bacilli in long chains; *B. subtilis* present. Repeated examinations showed pure yeast cultures in the midst of the blood clots. The urine was practically normal throughout the illness.

Blood: April 16, leucocytes, 12,100. April 18: hemoglobin, 82 per cent; red cells, 5, 180,000; leucocytes, 16,700; P. M. NS, 82 per cent; small lymphocytes, 13 per cent; large, 5.

April 21 he felt better. 9:30 A. M., T., 101°; P., 108. At noon, T., 100.8°; P., 100.

April 22, T., 100.4°; P., 96. He had slept well and his appetite was returning. His chest was clearing some.

From then to May 10th the chest gradually returned to normal.

Complications: April 26, he developed a rather severe phlebitis in his right leg. This was fairly comfortable by May 10 and gradually all cleared up. He later gave up business and spent his winters in Arizona and the summers North in Minnesota.

About a year ago I saw him on the street and he looked the "picture of health."

Summary: The patient, formerly in good health, exhausted from pressure of business, picked up a yeast infection in California and later developed double bronchopneumonia with pure yeast the predominating organism. In a former attack of pneumonia he developed phlebitis in his left leg; during this attack, phlebitis in the right leg. Neither of these attacks left permanent damage.

While systemic, or lung infection, with yeast organism from reports in the literature is usually fatal, this man had good luck and recovered completely.

THE MINNESOTA STATE MEDICAL ASSOCIATION

Will Meet in
MINNEAPOLIS
May 4-5-6, 1931

THE AMERICAN MEDICAL ASSOCIATION

Will Meet in
PHILADELPHIA
June 8-12, 1931

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1856.

A white woman, age 20, was admitted to hospital August 13, 1930. She had nephritis and had been admitted on three previous occasions. On August 3, 1928, she came in complaining of swelling of the legs and of tiring easily. Four months before admission she had a sore throat which lasted three days. She had left earache with no drainage. In April she noticed swelling of the ankles. At first this occurred toward evening and disappeared in the morning. In July the swelling extended to the knees and did not disappear. The appetite had always been good. There were no headaches and no dizziness. In July she noticed that she tired while at work and her eyes became puffy. A fellow worker remarked upon her sickly appearance. She had slight shortness of breath from July, 1928.

She was single. Both parents living and well. Catamenia began at the age of 16. There were no abnormalities.

Physical examination showed a well developed and well nourished girl. She had a pasty complexion and there was puffiness about the eyes. The ear drums appeared normal. The teeth appeared to be in good condition. The tonsils were small. The heart was enlarged slightly to the left. The blood pressure was 140/70. The liver and spleen were not palpable. There was edema two plus as high as the knees. She improved rapidly and was allowed to go home on August 17. While in hospital the following reports were obtained from the laboratory: Phenolsulphonephthalein 54 per cent; specific gravity 1.008 to 1.020; trace to three plus albumin (more often there was only a trace). A urine concentration test was done and there was a specific gravity ranging between 1.020 and 1.024. A urine dilution test was done, and the patient eliminated 1325 cc. in three hours out of a 1500 cc. intake. The specific gravity varied from 1.002 to 1.007. Blood: hemoglobin 69 per cent; red cells 4,100,000; white cells 5,800 with 64 per cent lymphocytes and 36 per cent polymorphonuclear leucocytes. Blood chemistry: creatinin 2.5 mg., urea nitrogen 7.7 mg. per 100 cc. The intake and output charted showed a fairly normal curve. The temperature was normal.

The second admission was October 25, 1928. She came in complaining of shortness of breath and swelling of the body. Since the previous admission she had been at the dispensary and was fairly well until three weeks before admission, when her ankles began to

swell. This progressed and she had to quit working. There was no urinary disturbance nor had she noticed any difference in the color of the urine. Appetite was good. Examination showed marked anemia and puffiness of the face. There was slight dyspnea. There was four plus edema of the legs, abdomen and chest wall. A suggestion of systolic murmur at the apex. Blood pressure, 142/90. Flatness and decreased whispered voice in the right posterior chest. The abdomen showed nothing of note save edema. Eye grounds examination showed the fundi to be negative. The patient developed acute infections while in hospital, the foci of which were not determined. Later she had an abscess of the thoracic wall. Blood pressure, 110/72. From November until her discharge the patient would have edema which would last for a few days and then go away. The blood pressure rose with the edema and went down when the edema disappeared. In February, 1929, it was almost entirely gone. The hemoglobin went up to 70 per cent. Blood pressure, 138/95.

The laboratory reported the specific gravity of the urine to vary from 1.010 to 1.038. There was much more albumin than on the previous admission; it ranged from two to four plus. There were many hyaline casts, many white blood cells, occasional red blood cells. Urea nitrogen 17, creatinin 1. Hemoglobin 60 per cent; red cells 3,200,000; white cells 18,000; the white count went down to normal one month later and remained normal. A concentration test showed 404 cc. eliminated out of 1500 cc. of intake. Specific gravity from 1.005 to 1.017. Another concentration test showed the specific gravity to range from 1.010 to 1.025. The patient was discharged, and readmitted March 5, 1929, two weeks after discharge.

She was unconscious and having convulsions. After she gained consciousness she gave a history of having a severe toothache. She had been quite well at home. She went to moving picture shows and was not careful about her diet. On March 3 she developed a severe toothache in the upper left jaw. This was worse on March 4. On March 5 she began showing edema of the face. This edema became marked in the next half day. In the evening she toppled over from a chair, had convulsions, and was brought to the hospital. On March 7, the left first upper molar was extracted; there was pus at the roots of the tooth; she was somewhat relieved. On the eighth there was an abscess in the roof of the mouth; this was incised. From then on her progress was uneventful. Blood pressure on admission

172/110. Twenty-five days later it was 128/72. Creatinin was 2.5, urea nitrogen 31.5. Hemoglobin 63 per cent; red cells 3,350,000; white cells 6,750. The urine showed two to four plus albumin; few to many casts; few to many leucocytes; very few to occasional red blood cells. The temperature was 99° on admission and stayed there three days. Patient discharged April 2, 1929.

At the final admission, August 13, 1930, she complained of pain in the back, blurring of vision, and shortness of breath. These symptoms had begun about the middle of July. She had had frontal headaches. Examination showed edema of the face. The skin appeared anemic. The eyegrounds showed definite albuminuric retinitis. The teeth were in good condition. The heart was slightly to the left. There were no murmurs. Blood pressure 222/134. Marked pitting edema of the knees and slight pitting edema of the upper extremities and over the sacrum. September 10 there was a palpable thrill over the heart and a friction rub over the entire precordium. No pain over the heart. A loud systolic murmur over the entire precordium and a to and fro murmur over the aortic and tricuspid area.

The course in the hospital was of the chronic, unimproving type. The temperature was normal for the most part but had occasional rises to 102°, where it would remain for two or three days and then come down again to normal. During these elevations of temperature, the edema would increase and the urine would show many leucocytes and erythrocytes. Hemoglobin 45 per cent; red cells 2,320,000; white cells 3,950 with 52 per cent polymorphonuclear leucocytes and 47 per cent lymphocytes. Creatinin 4.4; urea nitrogen 70. A blood Wassermann was negative. On December 8, creatinin was 8; urea nitrogen 102. Specific gravity of the urine varied between 1.010 and 1.026, usually around 1.010 with two to four plus albumin, occasional to many casts, few to many leucocytes, and occasional to many erythrocytes. An electrocardiogram was taken. X-ray of the chest showed enlargement of the heart and congestion of the lungs.

Post mortem report. No edema. The peritoneal cavity contains 2,000 cc. of turbid fluid; the peritoneal surfaces are roughened and congested (general peritonitis). The pericardial cavity is largely obliterated by fibrous adhesions but there is some fibrin and a little pus. The heart weighs 484 grams; no disease of the valves; left ventricular hypertrophy; no disease of the coronary arteries. Extensive terminal bronchopneumonia. The spleen weighs 324 grams. The kidneys together weigh 254 grams; adherent capsules; surfaces fairly smooth. On section the cortices are slightly narrowed and of pale color. Microscopic examination shows advanced chronic glomerulonephritis; there is fairly uniform involvement of all glomeruli and extensive tubular atrophy.

Comment. The clinical history is typical of glomerulonephritis. The gradual rise of blood pressure as the disease progresses is typical and differentiates the case from primary hypertension with uremia. The history reveals the fact that the disease began acutely. Probably many cases of chronic glomerulonephritis would show an acute onset if they were as carefully followed as in this instance.

Autopsy—31—192.

The case is that of a white man, 55 years old, admitted to hospital November 13, 1930. Present illness began in October, 1929, with dyspnea which became progressively worse. He quit work December 24, 1929, and was hospitalized for two and one-half weeks. After getting up his dyspnea became worse and edema appeared. January 30, 1930, he was readmitted to hospital for two and one-half weeks. After dismissal he was under the care of a physician. His condition remained about the same. October 27, 1930, he was admitted to another hospital, complaining of dyspnea, edema, and orthopnea.

No history of rheumatic fever or chorea. Infrequent attacks of headache and dizziness. All of his teeth had been extracted for lumbago. Mother died at 87 years from a stroke; father died at 67 with heart disease.

On admission, November 13, examination showed a well nourished white man, lying quietly in bed with his head propped up. Complained of dyspnea. There was edema of the face, hands, and feet. Blood pressure 170/92; temperature 98°; pulse 80; respiratory rate 22. Some impairment of hearing. Sharp systolic murmur at the apex of the heart. Dullness in the right posterior base with diminished tactile and vocal fremitus. Egophony and pectoriloquy in area of dullness in right base. Some râles were heard in both bases. Breath sounds diminished at right base. Liver 5 cm. below right costal margin. Diagnosis: hypertension with decompensation; auricular fibrillation.

Laboratory. November 14, urine showed specific gravity 1020; no albumin. Blood: hemoglobin 95 per cent; white cells 9,000; blood urea nitrogen 23.3 mg. Stools negative. Electrocardiogram showed left ventricular preponderance with auricular fibrillation. He was given tincture of digitalis. November 15 basal metabolic rate was +10 per cent. Irregular pulse. Ophthalmoscopic examination showed narrowing of the vessels with variations in caliber of the arteries, giving a beaded appearance. No hemorrhages or exudate. Six foot plate of the heart showed marked enlargement of all the chambers, chiefly of the left ventricle. The patient suffered continuously with dyspnea and was frequently nauseated.

January 25, blood pressure was 150/80; January 31, 180/105. Death February 1, 1931.

Post-mortem report. Edema of both lower extremities; some edema of the chest. No jaundice. 800 cc. of clear fluid in the right pleural cavity; left cavity obliterated by old adhesions. Heart weighs 885 grams; all chambers hypertrophied and dilated, especially the left ventricle. Valves are normal. Moderate sclerotic changes in the coronaries but no marked narrowing. Ectasia of the root of the aorta. Marked congestion and edema of the lungs. The spleen weighs 240 grams; marked passive congestion. Liver 1950 grams; marked passive congestion. Kidneys together weigh 500 grams; smooth surfaces; passive congestion. Diverticulosis of the pelvic colon. Moderate calcification of the abdominal aorta. Left inguinal hernia.

Diagnosis: Hypertension heart with congestive heart failure.

Comment: This is a typical case of primary hypertension in which death resulted from myocardial exhaustion. There is practically no involvement of the kidneys.

Autopsy.....30—1727.

A young white man, 19 years of age, admitted to hospital November 16 and died three days later. The history was obtained from the patient's attending physician. On November 8, while at a fraternity barn dance, the patient had a sudden sharp pain in the region of the lower bicuspid teeth, extending to the back of the head and persisting for two minutes. There were no other symptoms until the tenth when, at another party, he again experienced a pain in the same region which persisted for approximately two minutes. This time, however, he was unable to speak and the pain was excruciating. On the eleventh he developed headache but continued to work until 10 P. M., when the headache became definitely worse and he left work and went home. He there took cascara and aspirin without relief. At this time he noticed that he was unable to void. He was able to go to sleep at 4 A. M., November 12, although the pain in his head was intense and at this time extended down his back. On the twelfth his temperature was found to be 102.2°. He was given magnesium sulphate and aspirin with no relief. A physician called on this day found his particular complaint to be intense headache and fever. The temperature was 103°; pulse, 110.

Physical examination showed the pupils slightly dilated, definite rigidity of the neck without hyperextension, some sensitiveness over the bladder region, exaggerated knee jerk on both sides, negative Babinski on both sides, and slightly positive Kernig's sign. Patient's past history is completely negative except for tonsillectomy and adenoidectomy. On November 12 he was given enemas, as defecation was not otherwise possible. A sample of urine was obtained at this time and this was negative on routine examination. His principal complaint was headache. On November 13 the pulse was 102, the temperature 101.8°, and the patient was taken to a hospital. Spinal puncture was refused at this time. Later in the day, however, permission was obtained for spinal puncture. The fluid was clear and there were 304 white blood cells with 65 per cent polymorphonuclears and increase of globulin and sugar; no bacteria were found. On this day the patient was entirely unable to void or defecate. On the fourteenth spinal puncture was again performed. The fluid was bloody, the blood being attributed to faulty technique.

Physical examination at this time showed the pupils still dilated and definite rigidity of the neck. The headache had been relieved by spinal puncture. Abdominal reflexes were sluggish, the left leg completely paralyzed, the right leg sluggish, almost paralyzed, reflexes absent and no Babinski reaction. November 15 another spinal puncture was done. This specimen was clear with no blood present. Respirations were impaired and labored. There was some mental sluggishness. The patient was given 20cc. of Rosenow's serum and amytal gr. one and one-half to insure some sleep. On the sixteenth there was a definite impairment of speech and the patient was transferred to the present hospital and placed in the Drinker respirator.

Laboratory. November 17, blood examination showed hemoglobin 123 per cent; red cells, 4,650,000; white cells, 13,700 with a differential of 11 per cent lymphocytes; 4 per cent monocytes, 85 per cent polymorphonuclear leucocytes. The urine on the same date showed a specific gravity of 1020; acid; sugar+; heavy cloud of albumin; occasional leucocytes in the sediment.

20 cc. convalescence serum given intramuscularly.

Catheterization performed repeatedly. Codcine sulphate grain one-half; nasal oil and ephedrine. Hyper-ventilation repeatedly.

Nurse's notes. Admitted on November 16; placed in the Drinker respirator at once. Respirations were labored. He was unable to void. His color was good. He was able to speak but stated that he had no pain. Position of the arms was changed repeatedly. Temperature of the respirator was kept at about 86° to 88°. He was removed on the 17th and became cyanotic; he was immediately replaced. On the eighteenth there was some difficulty in swallowing. On turning, the patient became slightly cyanotic. On the eighteenth it was noted that speech was difficult. Later in the day his face became flushed, eyes bloodshot, and mucus was expectorated. Still later in the day he was unable to draw liquid through a tube. Pulse was 104 and a large amount of mucus was present in the throat. There was definite flaring of the nares and twitching present about the face and neck. He did not respond. Pupils were pin point. Later in the day the hands and nails were cyanotic. On the nineteenth he was hyper-ventilated. He did not respond. Pulse was of fair quality. Became more cyanotic and the pulse weakened. Exitus occurred at 12:45 A. M., November 19, 1930.

Progress notes. November 17 it was noted by the staff that the patient was breathing only with the accessory muscles at the time of admission and a complete examination was not done, for it seemed desirable to get him into the respirator at once. The lower extremities were paralyzed except for slight toe movement; the upper extremities extremely weak. No deep reflexes present. Cranial nerves normal. Moderate Kernig. No neck rigidity. He was having considerable air hunger but was not cyanotic. Quickly relieved in respirator. November 17 his upper extremities were completely paralyzed. He was reported as being cyanotic on being removed from the respirator for a position change. Speech was more difficult; the pupils smaller. He said he was very tired. The staff opinion was that the patient was worse, the prognosis very bad.

Post-mortem report. Moderate edema of the right lower extremity. Heart normal. Intense congestion of the right lung. Urinary bladder contains 800 cc. of urine. No gross lesions are found on examination of the brain and spinal cord. Microscopic examination shows the typical lesions of acute anterior poliomyelitis in the cord and medulla.

Diagnosis. Acute anterior poliomyelitis.

Comment. This is a fairly typical picture of polio-involvement of the medulla.

myelitis with a rather slow onset. Death was due to

Autopsy—30—1574.

The case is that of a white woman, 72 years of age, who was admitted to hospital September 9, 1930, at 3:20 P. M. A history taken on May 26, 1930, stated that the patient was in good health until March, when she "caught a cold" which did not subside. Her symptoms were marked dyspnea and weakness, edema of the ankles, cough with occasional bloody sputum, and pain over the precordium. Twenty years ago, when the patient was 52 years of age, she was in the hospital for dyspnea, weakness, edema of the ankles, and had had no trouble since.

Physical examination. Patient in orthopneic position. There were râles in both bases. There was a systolic

murmur at the apex transmitted to the axilla. Percussion showed left ventricular enlargement. The liver was just below the costal margin. Both ankles showed edema. The patient was very nervous and apprehensive. The thyroid was enlarged and nodular. X-ray showed the heart enlarged in all diameters; it equalled 71 per cent.

The laboratory reported the urine to be normal usually, but terminally it showed erythrocytes, leucocytes, and a faint trace of albumin with a fixed specific gravity of 1.018. The Wassermann was negative. The basal metabolic rate was +9.7. The blood picture was that of secondary anemia.

While in hospital the patient was very hard to handle. She would leave the hospital under protest only to come back in a few days. About the twenty-seventh of June she vomited some coffee ground colored vomitus and had tarry stools. There was no pain. An X-ray could not be obtained. She was put on a Sippy diet. Her appetite was always good except when she was

very dyspneic. She had another gastric hemorrhage on October 21 which continued until her death on October 24, 1930.

Post-mortem report. Slight pitting edema of the legs and ankles. No ascites. The lesser curvature of the stomach is firmly adherent to the under surface of the liver. When this adhesion is pulled apart an ulcer is found which penetrates into the liver. The ulcer is 10 x 6 cm. and occupies the lesser curvature of the stomach. The central portion perforates at the adhesion mentioned above. The ulcer is not indurated. There is marked chronic passive congestion of the liver. The heart weighs 480 grams; the pericardial space is completely obliterated by old adhesions; no disease of the valves.

Diagnoses. 1. Cardiac failure from adherent pericardium. 2. Perforated gastric ulcer.

Comment. The gastric ulcer was producing marked symptoms toward the latter part of the illness. Death, however, was due to cardiac failure from adherent pericardium.

This is the fifth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

By LEO G. RIGLER, M. D.

University of Minnesota
MINNEAPOLIS, MINNESOTA

F. *Diseases About the Joints in Children.*

1. *General considerations.* Rickets, scurvy, and congenital syphilis are essentially diseases of the bones in children, but the lesions are so closely associated with the joints that they are considered in this section.

2. *Rickets.*

- a. *General considerations.*

X-ray examination helps to determine definitely the diagnosis, to indicate the stage and severity of the disease, and can accurately define the progress of treatment. The x-ray findings in rickets are dependent upon the calcium deficiency which exists in the bones, the irregular "rank" growth of cartilage, and the continued absorption of cartilage.

- b. *X-ray findings.*

- (1) *During active stage.*

- (a) Marked haziness about joint.
 - (b) Broadening, flaring, "cupping" of the epiphyseal line of growth.
 - (c) Irregularity and roughening of the epiphyseal end of the diaphysis.
 - (d) Increased distance between the diaphysis and epiphysis.

This is only apparent and is due to the lack of calcium in this area of growth.

(e) Epiphyseal nuclei smaller than normal, poorly seen, margins hazy.

(f) Decreased density of shafts of bones, due to decalcification and coarser structure of bone.

(g) Greatest changes in the most rapidly growing bones, viz., distal end of the femur, distal ends of radius and ulna, but a generalized involvement. Club-shaped, "cupped" anterior ends of the ribs with similar roughening and broadening are also shown.

(h) Coarsening of structure of skull, thinning of bones, increased separation at sutures and fontanelles.

(i) Fractures, usually of the greenstick type, commonly present.

- (2) *During repair stage.*

(a) A thin line of bone appears between the diaphysis and epiphysis, gradually filling in with calcium up to the diaphysis. The distance of this first line from the end of the dia-

physis gives an indication of the duration of the process, the shaft having grown to that point during the active stage of the disease without calcification of the area of growth.

(b) Increased density of end of bone appears. Fine white lines appearing across the shaft of a bone may be due to healed rickets.

(c) Periostitis occasionally appears in severe cases. It locates itself usually on the concavity of tibia.

(d) Bowing of bones occurs, the fibula bowing toward the tibia and all bones curving near their ends.

(e) The effects of treatment may be seen by the appearance of the repair line, the deposition of calcium at the end of the diaphysis, the absorption of the irregularities.

(f) The structure of the zone of repair differs from that of the shaft of the bone. It is much finer and smoother.

3. *Scurvy.*

a. General considerations.

This is a comparatively rare disease. The x-ray findings are dependent upon the bone atrophy, the numerous microscopic fractures which appear near the ends of the bones, the subperiosteal hemorrhages which rapidly calcify.

b. X-ray findings.

(1) Atrophy of bone, i.e., decreased radiability and a "ground-glass" appearance due to loss of structure.

(2) "Trummer" zone, an area of marked density just above the epiphyseal line due to numerous very small fractures with crushing.

(3) An area of marked decreased density just proximal to this zone due to decalcification.

(4) Spurs of bone appearing on each side of the epiphyseal line.

(5) A fusiform dense shadow appearing around the shaft of the bone due to calcification of a subperiosteal hemorrhage.

(6) Frequent fractures with poor repair.

(7) Ribs showing clubbing of ends but no roughening or cupping.

(8) The epiphyseal nucleus giving the same findings as the diaphysis best seen on the side next to the joint.

(9) The whole skeleton involved but the most striking findings present in the most

rapidly growing bones.

(10) With healing new normal bone appearing at the epiphyseal line, the "Trummer" zone is pushed up into the shaft, atrophy disappears.

4. *Congenital Syphilis.*

a. General considerations.

The x-ray evidence of bone changes should be present in 90 per cent of the cases of congenital syphilis. The findings are dependent upon the inflammatory process in the epiphyseal growth cartilage, the destruction of bone, the periostitis.

b. X-ray findings.

(1) Early, the end of the metaphysis is thickened, and shows increased density with a marked wavy, irregular line between it and the shaft.

(2) Behind it there is a clearer zone.

(3) Later irregular areas of bone destruction, areas of defect in the bone, appear just behind the epiphyseal line. These are best shown on the medial side of the proximal end of the tibia.

(4) Periostitis of marked degree appears, being visible on all sides of the bones.

(5) There is no bone atrophy and fractures are not so common.

(6) The process is generalized but appears most striking in the rapidly growing bones.

(7) The process is really behind the epiphyseal line rather than in it.

(8) In very early infancy there may appear simply destruction without periostitis.

(9) All the bones may show increased density in their centers. There may be cone shaped areas of density at the ends of the long bones.

(10) Similar changes may appear in the epiphyseal nuclei and in the carpal and tarsal nuclei. The latter may show especially well the zone of density and of atrophy as circular lines.

(11) The repair process is perfect, often no evidence of the original lesion appearing.

(12) Syphilis "tarda," congenital syphilis appearing in older children, gives much the same findings in the bone as acquired syphilis.

5. *Differential Diagnosis.*

a. Rickets.

Atrophy, process in the epiphyseal line, flaring saucer-shaped, irregular epiphyseal line, bowing, fractures.

b. Scurvy.

Atrophy, process behind epiphyseal line, "Trümmer" zone, fractures, subperiosteal hemorrhages.

c. Congenital syphilis.

No atrophy, fractures not so common, process behind the epiphyseal line, areas of destruction, periostitis.

6. Value of x-ray examination.

Roentgen examination is a very important aid in the diagnosis of the diseases of the ends of the bones in children in their differentiation from each other, and in the estimation of the intensity of the process and the effects of treatment.

MISCELLANEOUS BONE DISEASES

A. *Achondroplasia—Chondrodystrophy*

The ends of the diaphyses of the long bones are broadened, there is early union of the epiphyses. The long bones are short but normal in thickness, especially noticeable in the phalanges. Bowing of the humeri with large projections near the upper ends is often found. The spine is not affected. Occasionally only one bone or one limb is affected. The ribs may present a "rosary" similar to rickets and scurvy but there is increased density rather than atrophy.

B. *Fragilitas Ossium—Osteogenesis Imperfecta*

Numerous fractures in all bones are present. These are usually of the splintering type with comparatively little displacement. Callus formation is very prompt and very dense giving good union.

C. *Mongolian Idiocy*

Growth is variable, the appearance and union of the epiphyseal nuclei being delayed, more rapid than normal or asymmetrical. The characteristic finding which occurs in 90 per cent of the cases is a shortening of the middle phalanx of the little finger, which is bowed in toward the ring finger.

D. *Cretinism and Myxedema in Children*

Absence of epiphyseal nuclei at the proper period, and thickening of the ends of metaphysis with numerous white dense lines crossing the long bones are characteristic findings. The latter indicate periods of a "stagnation of growth" and may occur during any severe illness as well. The sella turcica is always enlarged.

E. *Osteomalacia*

A general reduction in calcium produces a marked rarefaction of the bones. Fractures are numerous, tend to be without displacement, and show little or no callus.

F. *Osteoporosis*

Usually occurs in the aged and shows also generalized decalcification. There is a tendency toward narrowing of the bodies of the vertebrae with cupping of the articular surfaces.

G. *Osteochondritis Juvenilis Deformans*
(Perthe-Legg-Calve's disease)

1. Findings.

The epiphysis of the head of the femur becomes flattened and as the disease progresses it becomes thin and disc-like. It may then become segmented, three or four fragments appearing. Clinically this disease is often mistaken for tuberculosis of the hip joint but it can be differentiated on x-ray examination.

2. Differentiation from tuberculosis.

- Lack of involvement of the acetabulum.
- No change in the joint space or cartilage.
- No areas of destruction in the bone.
- No dislocations and no marked deformities.
- May be bilateral.
- Some distortion of the neck occurring secondary to the changes in the head of the femur.
- Never any haziness of the joint or evidences of exudate in or about it.

H. *Osgood-Schlatter's Disease*

(Osteochondritis of the tibial tuberosity)

The epiphysis of the tuberosity of the tibia becomes separated from the shaft, lifted up, and may become fragmented. There is swelling of the soft tissues about it.

I. *Köhler's Disease (Malacia) of the Navicular of the Foot*

The navicular of the foot becomes smaller than normal, much denser than normal, and may become fragmented. The normal cancellous structure of the bone is lost and it becomes uniformly dense.

J. *Freiberg-Köhler's Disease of the Second Metatarso-Phalangeal Joint*

The head of the second metatarsal becomes broader than normal, flattened out, the neck becomes thick, and the joint space is distinctly increased in size. There may be swelling of the soft tissues about it.

K. *Kienböck's Disease of the Os Lunate (Semilunar Malacia)*

The os lunate becomes smaller, flattened, increased in density, and often fragmented. The cancellous structure is lost.

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CRITICS, MEDICAL AND LAY

The following extracts are from an advertisement of a book recently published by a New York firm:

"This book aims to give the layman the facts as to what goes on under the cover of 'medical ethics,' what abuses, what ignorance, are connived at in its name; and to give him an inkling of the average man's helplessness. The author has written this book with the sole desire of bettering the atrocious conditions which it describes and should be read by every mature person.

"Statements made by leading physicians and surgeons at the recent Clinical Congress of the American College of Surgeons showing the timeliness of this volume.

"Errors in diagnosis had been made in from 20 to 75 per cent of cases that resulted in death. Dr. B. H. M....."

"We must educate the public in many lines. People are more ignorant of medicine and surgery than of any other science. Dr. C. P. M....."

(In the advertisement, doctors' names given in full).

Along somewhat similar lines is an article in the Outlook and Independent of Nov. 12, 1930, entitled "The Curse of The White Collar Babies," in which, among other detailed incidents is the romance of a young man, earning a salary of \$225.00 per month, who was fortunate enough to induce an obstetrician to reduce his usual delivery fee of \$600.00 down to \$300.00, payable in 12 installments; the remainder of the delivery bill of expenses, \$1,000.00, represented hospital and nurses' charges.

The N. Y. Times of Feb. 22, 1931, blazes forth the interesting information that at the child wel-

fare hippodrome meetings in Washington, there were decided criticisms of doctors, dentists, and hospitals because Utopia had not yet been attained. The same paper, September 7, 1930, shows that a certain medical organization there urges a "curb on hospitals," on the ground that laxity in private institutions permits needless operations. (Of course no suspicion of professional jealousy enters into this "curb" for the benefit of the public).

Why such billingsgate? Partly on account of the attitude of some of the doctors towards their fellow practitioners, which tendency is not lessened by changing economic conditions. Also, partly due to the divisions of the medical profession into various specialties. One can here well recall what Osler stated, in his Installation Speech at Oxford, year 1919. "Specialism, now a necessity, has fragmented the specialties in a way that makes the outlook hazardous; the workers lose all sense of proportion....." How much more, in these later years, has there been a tendency to magnify the specialties and their proponents, coupled with the attitude that "general medicine" is but a weak sister. And this has its effect upon the public. Several months ago, such a staid paper as the N. Y. Times worked in a sobstuff editorial on the "General Practitioner," and then with owlish wisdom finished up with the statement that all that is left to the G. P. is to attend to minor ailments and to see to it that the dear public is carefully guided into proper channels leading to the various specialties, which is quite a serious joke on the G. P.

Within the past decade or two it has been the custom of one of the organizations in specialties, at their annual regional meetings, to have one "publicity night" to which the public is invited, and a first class talk is given on some subject which is supposed to be interesting and useful. The result probably is that the dear public gain a modicum of knowledge, but there's another thought they have acquired, and that is: Only

those, and those only, who belong to that organization are the salt of the earth, and the general practitioner, no matter what actually may be his accomplishments, is as dead and as much of a fossil as the ancient dodo. In the *Jrl. A. M. A.* recently, a writer, in giving details of the combination of a few societies in similar specialties, tells us that it is their duty to notify the medics and the lay people how to discriminate as regards specialism. Let's take an instance: In a California city of over 150,000 inhabitants there are over 300 physicians. The latest catalogue of a specialty organization shows a membership in that city of seven (7). Must the dear public judge all but the seven (7) as of the dodo tribe of incompetents?

Certainly, American medicine has taken vast strides, say in the past thirty years, at least. To read much of the stuff that is being dished out by some newspapers and certain specialist groups, the public might imagine that medicine, surgery, obstetrics, etc., were at very low ebb in professional value. This is hard on our medical schools, with their stiff courses, plus the subsequent internships demanded of the students. On March 1, 1931, the membership of the *A. M. A.* was ninety-eight thousand, eight hundred and seven (98,807). Deducting several thousand for the specialties, are all the other many thousands lacking in general professional skill? Dr. J. B. DeLee, of Chicago, in his latest *Annual Review of Obstetrics* (Yr. 1929) strongly protests against that frequent cry of maternal mortality and childbirth deaths in these United States, and maintains that it is no worse than in European countries. In Aberdeen, Scotland, figures taken for the period of ten years (1918-27) showed a total rate per 1000 maternity cases of 14.9 in the In-patient institutions, and only 6.9 in the private practice of the physicians. Lately, in Paris, France, stillbirths were 11 to 100. (*Jrl. A. M. A.* March 7, 1931). American medicine now has the respect of foreign countries. A few months ago an Eastern paper carried an advertisement from the Turkish Government requesting applications from the United States for professorships in its medical college. Also, about the same time, the *Journal A. M. A.* carried somewhat similar requests from the medical colleges of Great Britain or Scotland.

What, then, does the medical profession need? Within its borders, more of peace and harmony. In unity there is strength. A. W. S.

DIETARY DEFICIENCIES

One of the greatest contributions of all time to the health of people is that made in recent years

through the study of daily food requirements of the human body. With the discovery of vitamin by Funk in 1911 began a period during which careful scientific observation and study has caused mystery to lose a strong grip in the human family. Scurvy, beriberi, xerophthalmia, rickets and pellagra having been the cause of much suffering, deformity and untimely death for centuries, having retarded progress in the world's development, having all but prevented Columbus from completing his famous voyage in 1492, having been attributed to many absurd causes such as atmospheric conditions, have finally been wrested from the grasp of mystery. Their causes have come to light and their prevention has proved effective. Most of this has been brought about through the contributions of our knowledge of various vitamins. Since it has been impossible to isolate and analyze chemically the vitamins it became necessary to use large numbers of animals for their study. The stage had been set through the tedious, laborious and time consuming work of Jackson, Donaldson and others. They had studied most completely one laboratory animal, the white rat. They knew its normal growth curve, its average length of life and its responses to different kinds of food in varying amounts. They even knew how its tissues at different ages in life compared with those of man, having shown that one year of the white rat's life is equal to thirty years of human life. Therefore a laboratory animal, well understood, was available when the time arrived for the practical application of vitamin studies. This has made it possible for the work to progress quite fast.

Out of numerous studies has come the discovery of several vitamins which have been designated A, B, C, etc. Jackson says: "It is not at all likely, however, that the list of vitamins is finally exhausted. Some or all of the vitamins now recognized are probably composite in character, and other undiscovered factors doubtless exist. . . . It is indeed quite possible that before the knowledge of nutrition is complete all the letters of the alphabet will have been insufficient to designate the various vitamins and similar dietary factors involved."

Vitamin A (Anticerotic) was discovered simultaneously by McCollum and Davis and by Osborne and Mendel. When it is deficient in the diet it lowers resistance to infections and prevents growth and development in the young. A disease condition, xerophthalmia, is very commonly found among children who take a diet deficient in vitamin A. Xerophthalmia, is an infection resulting in inflammation of the eye lids. Often enough pus

is formed so as to make it difficult to open the lids after they have been closed during a night's sleep. The infection sometimes spreads to the cornea and may in severe cases result in opacities and even in blindness. The development of this infection is due to the low resistance of the child caused by deficiency in vitamin A. Children as well as animals on diets, deficient in vitamin A become very susceptible to the respiratory diseases, not only those of an acute nature, like pneumonia, but also those that are chronic like tuberculosis. This fact has made it difficult to study animals over a very long period of time with a deficiency of the vitamin A content of food. In studies made by Sherman and MacLeod among animals on diets deficient in vitamin A, a strong tendency was found for the animals to develop lung disease at the age which corresponds to that in the human family when tuberculosis is so prevalent and destructive. Sherman and MacLeod have also found that when two groups of rats with the same previous histories were fed upon different diets, the one group receiving food

with a high vitamin A content and the other a low vitamin A content, growth continued approximately the same in the two until shortly before the normal adult size was reached. Here growth ceased in the group with a low vitamin A content diet, and they never reached the normal body weight. Moreover, they only lived half as long as those on the higher vitamin A content diet.

Vitamin A is found in foods such as green beans, green peppers and the green leaves of plants. Animals including man may obtain their supply of vitamin A from such green foods. The animal and human body have the ability to store vitamin A. It is stored in greatest abundance in the liver, some is stored in the lungs, and in adipose tissue. Therefore, vitamin A may be obtained from certain meats and animal products, such as liver, eggs and milk. Fortunately vitamin A is quite staple. Heat has very little effect upon it. Therefore, cooking of foods does not reduce the vitamin A content to any appreciable extent. Discussion of the other vitamins will appear from time to time.

J. A. M.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.

Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

State Health Officers' Conference

The seventh annual Health Officers' Conference is called for May 1 and 2 at Bismarck. A splendid program is provided. The major subjects for discussion will be Poliomyelitis, Meningitis, Botulism and a symposium on Undulant Fever from the standpoint of the physician, the health officer, the laboratory, and the relation of the dairy cow to this disease in man. Everybody is invited. Health officers are expected to attend.

What the Legislature Did to Public Health in North Dakota

The State Legislature, we believe, had a sincere desire to reduce taxes, but we do not believe that a large body of this nature can have a real appreciation of the relative values so necessary to a wise reduction of state expenditures. These have steadily increased during the past ten years to meet the overwhelming demand of the most stupendous revolution in social, economic and ethical standards of living that has confronted any people in any age. Such matters should be left to the budget board.

The appropriation bill for the State Department of Health presented by the Budget Board, after running the gauntlet of the several committees of the legislature with its distorted psychology, was seriously mutilated in several vital places. The work of twenty years stands a fair chance of being destroyed. Four items are here especially called to the attention of our readers:

1. The item in support of our Division of Sanitary

Engineering, the backbone of public health, which has up to this time been financed by an outside subsidy, was completely discontinued.

2. The salary of the Director of the Bureau of Child Hygiene was reduced to \$5,600 for the biennial period. The Director of this Bureau will no doubt resign in July. We can ill afford to lose her valuable services.

3. The salary of the Director of the Bureau of Preventable Diseases has also been reduced to the same amount. He also will undoubtedly go back to general practice. The loss to the State will be serious.

4. The travel expense items for the whole Department have been reduced to \$4,000 for the two year period. This means that only the most acute emergencies can be paid for by the Department and whenever epidemiological investigations or assistance are desired, the local community requiring aid will be under the necessity of contributing the major portion of the expense.

This is not intended to be pessimistic, as there are several contractions and changes in administrative procedure which may be resorted to in an effort to save to the Department a portion of the apparent losses. These are as yet only tentatively planned and not yet in condition for publication.

Occupational Hazards

May we have a specific answer to question 24 on the death certificate, "Was disease or injury in any way related to occupation of deceased?" The Census Bureau requires it.

PROCEEDINGS MINNEAPOLIS CLINICAL CLUB

Meeting of March 12, 1931

The regular monthly meeting of the Minneapolis Clinical Club was held in the Hennepin County Medical Society Lounge on Thursday evening, March 12, 1931. The meeting was called to order about 7:15 by the President, Dr. F. H. K. SCHAFF. There were 22 members present.

Following a short business meeting, the following scientific program was given.

DR. WILLIAM P. HERBST (by invitation) read a paper, illustrated with lantern slides, on "The Motility of the Upper Urinary Tract," and a study of the various functional disturbances of motility, which open up a new field for the surgical treatment of various painful renal and urinary syndromes.

ABSTRACT

Adequate drainage of the urinary tract which is dependent mainly upon its motility is, outside of excretion, the most important phase of the physiology of this tract. This tract has an inherent control mechanism which functions satisfactorily when severed from its connection with the central nervous system. This applies to its excretory function as well.

We have accurate knowledge of the action of certain drugs on the motility of the urinary tract gained from direct fluoroscopic observation. The usual urogram is a composite picture of multiple superimposed phases of motility.

Intravenous urography, when satisfactory, produces a picture not influenced by overdistention nor incomplete filling factors of ureteral catheter injection. We have available a method of examination in pyeloscopy (fluoroscopic visualization of the motility of the urinary tract) that is relatively as satisfactory as fluoroscopic examination of the esophagus, stomach, small intestine, and colon, and which makes possible the recognition of abnormal neurogenic functional mechanisms corresponding to such conditions as cardiospasm, spastic colon, Hirschsprung's disease, auricular fibrillation, and all types of obstructive pathology.

Eserine appears to offer relief in conditions of mild and transient pain due to certain of the functional disturbances in motility secondary to abnormal sympathetic influence.

There lie before us surgical procedures which promise much for the relief of very distressing types of renal and ureteral pain and various accompanying functional motility disturbances; also

certain cases of chronic glomerular nephritis which are not making satisfactory progress under medical supervision and therapy. We have an explanation of the diametrically opposed views on the proper treatment of nephroptosis and the so-called ureteral strictures.

A number of slides were shown illustrating the mechanism of the motility of the urinary tract, and also from a number of cases which were diagnosed as having definite functional motility disturbances of the upper urinary tract, with the diagnostic and therapeutic data.

DR. MOSES BARRON then gave his Presidential Address entitled "The Present Day Conception of Nephritis."

ABSTRACT

There is a great deal yet to be learned in regard to nephritis, but the recent work on this disease has clarified many of the complicated problems.

The term "nephritis" is used to designate that condition in which the glomeruli are quite generally involved throughout the kidney, the so-called glomerulo-nephritis. (Slides were shown to present the relationship between the diffuse glomerular nephritis and other kidney lesions.) In a general way the classification subdivided kidney affections into

1. Benign albuminurias
2. Nephroses
3. Malignant hypertension
4. Senile arteriosclerotic kidney
5. Nephritides.

Under the last subdivision was included, as a further subdivision, the diffuse glomerulo-nephritis.

The etiology of the disease is uncertain. According to Volhard the true hypertension may be subdivided into the "red" hypertension, the so-called essential hypertension, and the "pale" hypertension of nephritis. His concept as to the pathogenesis of the latter is that there is a general systemic arteriolar and perhaps capillary constriction in which the glomerular capillaries and arterioles necessarily take part. The early change is a spasm of the arterioles with ischemia of the functional glomerular elements. The substance causing the constriction supposedly circulates in the blood, at first originating in the toxins of some infection in the throat or other part of the body; later the constricting substance is elaborated in the

kidney. According to Dr. Bell, the changes in the glomeruli are also brought about by an infection, but the glomerular changes are due to the direct effect of the bacteria and their toxins. He shows the presence of leucocytes and the proliferation of the endothelial cells as well as of the epithelial cells in the glomeruli to substantiate his theory.

But whatever the original cause, the progress of the disease results in a gradual increase of fibrils and cellular elements and finally of connective tissue in the glomeruli with a gradual closing off of the capillaries and consequently a progressive ischemia. This finally goes on to kidney insufficiency.

The best tests for kidney insufficiency are the concentration and dilution tests. The former shows the functional ability of the kidney to concentrate the urine over and above the molecular concentration of the deproteinized serum. In the advanced stages of kidney insufficiency, this ability is lost and the urine maintains a constant specific gravity of 1.010, which is that of the deproteinized serum. This is known as isosthenuria. The normal kidney can concentrate at least to a minimum of 1.025, and usually higher. The importance of this ability to concentrate lies in the fact that the present day concept of renal function (Cushney, Richards) assumes that the urine as elaborated in the glomerular spaces is a simple filtrate of deproteinized serum. This urine, serum minus the colloids, is concentrated in passing through the convoluted tubules by the resorption of water (and certain threshold substances such as glucose). This ability to concentrate is apparently decreased through the progressive loss of the functioning ability of an increasing number of the secretory elements, the glomeruli with their tubules.

The next stage of kidney insufficiency is when it is unable to dilute. The normal kidney can dilute the urine, following the ingestion of 1000 to 1500 cc. of water, to as low as 1.002 or even 1.001. Later the products of metabolism may be retained in the blood serum as is revealed by the blood chemistry.

The edema which may accompany the nephritis is not directly renal in origin, but may be considered as extrarenal.

The acute stage of nephritis may go on to recovery with complete restitution, or to death either from cardiac decomposition, uremia, or secondary infections. Some cases go on to chronicity and then may become either subacute, subchronic, chronic or recurrent. Recovery after one year's duration of the nephritis is rare; after two years, practically never.

The treatment during the acute stage is to limit the fluid intake according to the patient's ability to excrete, restricting the protein intake to 20 or 40 grams a day, and to give a high carbohydrate diet rich in fruits and vegetables, salt intake to be limited to obviate edema. The three day starvation diet of Volhard may be tried, followed by his so-called "Wasserstoss." One must be careful in using the latter procedure. Diuretics are of very little importance.

A number of charts were shown to illustrate the normal structure of the glomerulus as well as the pathological one in nephritis. A large series of very beautiful photomicrographs taken from glomerular nephritis in various stages were shown. These were obtained through the kindness of Dr. E. T. Bell, of the Department of Pathology of the University of Minnesota.

There was no discussion of either paper.

The meeting adjourned.

H. BRIGHT DORNBLASER, M.D., Secretary.

PROCEEDINGS MINNEAPOLIS SURGICAL SOCIETY

Meeting of March 5, 1931.

DR. A. T. MANN, President, presiding.

The regular monthly meeting of the Minneapolis Surgical Society was held in the Lounge of the Hennepin County Medical Society on Thursday evening, March 5, 1931. The meeting was called to order at 8 p. m. by the President, DR. A. T. MANN. There were 27 members present.

Minutes of the February meeting were read by the Secretary.

The President and several members announced the receipt of letters from Dr. Clay Ray Murray thanking them and the Society for the courtesies shown him on his visit to Minneapolis. The President also stated that the Council recommended the election of Dr. Murray to Honorary Membership in the Minneapolis Surgical Society, and upon vote of the Society this was unanimously carried.

Upon ballot the following officers were elected for the ensuing year:

President - - - Dr. J. FRANK CORBETT
 Vice-President - - - Dr. E. K. GREEN
 Secretary-Treasurer - - - - -

Dr. H. O. MCPHETERS (re-elected)
 Council Member - Dr. MARTIN NORDLAND

The scientific program of the evening consisted of the following:

Dr. WILLARD WHITE read a paper on "Traumatic Appendicitis."

DISCUSSION

Dr. J. FRANK CORBETT said that a number of years ago he read Kelly's book on "The Vermiform Appendix and Its Diseases," and he thought the author stated about all there is to be said near the close of the book. As nearly as Dr. CORBETT could remember it was this—"Traumatic appendicitis does not occur in a normal appendix, but it may occur in an appendix that previously has been the site of an infection." Dr. CORBETT was of the opinion that this is a reasonable view of the situation, and brings one back to the question of latent infection that has been flared up by some unusual occurrence. He had had the opportunity of seeing only a very few cases of traumatic appendicitis, but had had extensive experience down on the border in the concentration of troops. There were many hardships in long marches and knocking around and among the regular army men there was practically no acute appendicitis. Then there was another group of recruits who had been taken from civil life, and the incidence of appendicitis among these (very many giving no history of previous attacks) was extremely high. In other words, all of these men were fed the same and lived the same, but the change in diet and living for these men who were not accustomed to such rough hard life was sufficient to flare up a more or less latent infection which they may have had. Dr. CORBETT said that this experience which he had had made him more willing to believe that trauma is an exciting factor in the production of appendicitis in a predisposed individual.

Dr. O. H. WANGENSTEEN said that most everyone would concede that trauma that severs the appendix or its mesentery or that causes a bursting of the appendix would constitute a traumatic lesion of the viscus. Concerning the obstructive appendicitis which Dr. WHITE spoke particularly about as being engendered by trauma, there is adequate cause for debate. Dr. WHITE postulates that a blow on the abdomen increases the intraluminary pressure in the appendix in such a manner that a fecalith may become impacted in its lumen. This conjecture, however, demands proof. It is well known that no such happening occurs in acute or chronic types of bowel obstruction of the lower colon. There undoubtedly is some difference in the displacement occurring under the influence of gradual distention and that attending sudden changes of pressure. However, in simple obstruction of the sigmoid flexure, perforation or other changes such as gangrene of the proximal bowel may occur due to the distention of the proximal bowel. Shimodaira, of Kocher's Clinic, in 1911 indicated that the lesion that is responsible for a simple obstruction assuming strangulation features is usually a carcinoma of the sigmoid flexure, and perforations, ulceration

or gangrene are usually observed in the cecum, occasionally in the terminal ileum, and at times in portions of the colon nearer the point of obstruction. The reason that these distention ulcers occur in the cecum is easily apparent. If one takes two toy balloons of equal size but of unequal texture and attempts to distend them by blowing, the larger one always inflates with greater ease and ruptures more easily. Similarly, the cecum has the largest diameter of the entire bowel. The appendix, with a relatively thick wall and small lumen, would not distend easily. Dr. WANGENSTEEN had never heard of a perforation of the appendix from an occlusion of the sigmoid flexure, though its occurrence in the cecum is well known.

Dr. WANGENSTEEN stated that Wilkie, of Edinburgh, has pointed out that obstructive appendicitis due to the impaction of a fecalith in the lumen of the appendix is a serious form of the disease, for the appendix often ruptures before there is an inflammatory reaction around it. It would not appear, however, that Dr. WHITE has adduced any evidence to indicate that in trauma a fecalith may become lodged and impacted in the lumen under the influence of a force exerted upon the abdominal wall. No one will dispute the traumatic origin of appendices severed under the influence of trauma, but Dr. WANGENSTEEN felt there was no evidence to substantiate Dr. WHITE's conclusion relative to the group of cases that he has described.

Dr. A. T. MANN asked Dr. WHITE if, when speaking of a ruptured appendix, he meant a real case.

Dr. S. H. BAXTER asked if any experimental work had been done along this line. What Dr. WANGENSTEEN has said would apply if one assumed that the cecum is distended. But if the cecum is flaccid and simply filled with fluid, it is conceivable that the force would be expended equally in all directions and fluid might be forced into the appendix and rupture the appendix itself. Dr. BAXTER felt that it would be a matter for experimental work to decide.

Dr. MARTIN NORDLAND asked Dr. WHITE if he had access to the General Hospital records in this connection. He said that about 1913 when at the General Hospital he had assisted Dr. WILCOX in operating on a boy about eight years old who had been hit in the abdomen by a baseball. A diagnosis was made in that case of traumatic ruptured appendix.

Dr. J. M. HAYES recalled one case which was quite evidently of traumatic origin. A number of boys had gathered at a boy's home to celebrate his birthday. As they were struggling to lay him across a box to paddle him the area over the appendix was hit hard against the corner of the box. He collapsed at the time, then seemed quite well for a time. Less than an hour afterward he complained of severe pain in this area. He was taken to the hospital about twelve hours later with what appeared to be a very severe appendicitis. The family would not consent to an operation immediately, but a little later (about 15 or 16 hours after the accident), he was opened and the appendix was found to be gangrenous in the distal half. The patient had never had an attack of appendicitis before and was perfectly well and healthy up to the time of the accident.

Dr. MANN asked Dr. HAYES if that case was one with or without pus.

Dr. HAYES replied there was no gross evidence of free pus.

DR. WEBB asked if some of Dr. Howard A. Kelly's fifty cases did not contain nut shells and pins, as well as numerous fecal concretions.

DR. KENNETH BULKLEY was of the opinion that the arguments in favor of appendicitis being of traumatic origin were not conclusive, inasmuch as the interpretation of the abdominal pain in most of the cases cited was not properly made. To argue that because following abdominal trauma an individual immediately developed pain and that hours or days later definite symptoms, in addition to the symptom of pain, developed indicative of an appendicitis, and that at operation a definite appendicitis was found, is not conclusive evidence that the trauma sustained was either a direct cause or an exciting factor in the development of this appendicitis. A severe blow upon the abdomen concededly causes pain, particularly if the individual receiving such a blow is not prepared for it and has not set his abdominal muscles on guard. Even with his muscles on guard the pain immediately following a severe blow may be intense. This pain is due probably not only to contusions of the skin, subcutaneous fat, and muscles of the abdominal wall, but quite possibly also due to contusion of the parietal peritoneum. If the blow causing this pain is of sufficient severity to cause intra-abdominal injury one of four intra-abdominal lesions is apt to result, namely:

1. Rupture of the spleen.
2. Rupture of the liver.
3. Laceration of the mesentery.
4. Pneumatic blow-out or actual division against the vertebral column of the jejunum.

Other injuries, of course, are recognized but these four are probably the most common. DR. BULKLEY had never personally seen a case himself nor did he remember having encountered in the literature a case following abdominal trauma in which on opening the abdomen direct evidence of injury to the appendix was found, with the exception possibly of cases of severe crushing injuries in which injury of the appendix was coincidentally found with multiple severe intra-abdominal injuries. Just because a patient receives a blow upon the abdomen, the immediate pain, as already noted, is probably due to abdominal contusion; and just because this patient later develops symptoms of appendicitis, it does not, in DR. BULKLEY'S opinion, seem reasonable to assume that the development of this appendicitis is due to the blow. All appreciate the rapidity with which an acute attack of appendicitis may develop. DR. BULKLEY recalled vividly the instance of a young boy operated upon in a hospital many years ago for hemorrhoids. This boy had been under hospital observation for five days with normal pulse and temperature. At 8 o'clock in the morning this boy developed abdominal pain. DR. BULKLEY operated upon him four hours later, removing an appendix gangrenous throughout practically its entire length. Let us assume that an hour previous to the onset of pain the nurse had by accident dropped this boy's breakfast tray, striking him upon the abdomen. Under such conditions, the proponents of traumatic appendicitis would probably have argued that this was a case of traumatic appendicitis! If one studies carefully the histories of the cases of DR. KELLY, quoted by DR. WHITE this evening, one can find but little argument, assuming the theory of abdominal contusion to be correct, to classify any of these cases as real traumatic appendicitis. It was DR. BULKLEY'S opinion that development of appendicitis hours or days following abdominal

trauma was purely fortuitous.

DR. J. H. RISHMILLER stated that it was the general practice to remove an apparently normal appendix when an intra-abdominal operation had been undertaken for a definite pathological entity. When opening the lumen one may find animal parasites, especially the oxyuris vermicularis or a fecalith.

He stated that a hard blow over the right lower abdominal quadrant may easily light up a fulminating inflammation of the vermiform appendix in one who previously had considered himself or herself symptom free. Physicians are all schooled in the primary etiological factors which are the forerunners of appendicitis. In other words, one with pinworms or fecal concretions has had a definite latent appendicitis. Consequently, trauma can be regarded only as an indirect cause and not as a direct cause. DR. RISHMILLER stated that trauma was coincident with latent appendicitis, resulting in suppuration with all its possible sequences. This, DR. RISHMILLER believed, was now the general status of opinion of traumatic surgeons towards traumatic appendicitis.

He stated that so far a blow on the neck had not been claimed to have been the cause of traumatic tonsillitis nor had a blow on the abdomen, causing intra-abdominal contusion, been the forerunner of typhoid fever, but nobody knew what effect the rapid progress of time would have on the mental attitude of public opinion. He had never seen a case of primary traumatic appendicitis. He had had men come to him who thought they had strained the abdominal muscles; they had pain over the right lower abdominal quadrant and some thought they had a hernia. He said it was sometimes difficult to persuade them that they had appendicitis and not a muscular lesion.

DR. RISHMILLER reported a case of indirect injury that occurred in 1910: Two men were riding on an electric truck and probably did not know what they were doing, due to the fact that they were under the influence of Bacchus, being so vivified that they ran into one of the "Soo" trains which was going at about thirty miles an hour. Both men were pitched forward. One man came out practically whole; the other had a scalp wound four inches long on the vertex. He was taken to the Swedish Hospital where DR. RISHMILLER examined him for fracture of the skull, but could detect none. He sewed up the scalp wound, put the patient to bed and kept close watch of his cranial injury. The patient had no other external injury. His temperature, pulse, and respiration had been taken with the intent of carefully watching his intracranial condition. The patient had been fairly comfortable during the night, but the next morning, following a soapsuds enema, he became suddenly worse and died, and the question naturally arose, What did he die of? The speaker had talked with the man about five minutes before he died and the patient stated that he had such severe abdominal pain that he could not endure it. A partial autopsy was done which revealed a rupture of the small intestine. What had been the cause of the rupture of the intestine? This condition DR. RISHMILLER had not seen mentioned in the literature. On the right side, near the appendix, all the intestines had been akklutinated by chronic adhesions. It was his opinion that from the momentum of the patient striking on his head, the intestines had been suddenly thrown forward and then suddenly stopped, and this produced a rent in the intestine on account of the chronic adhesions, due evidently to an old lingering

appendicitis. DR. RISHMILLER stated that very often we have indirect injury to deal with and this was one condition in which there was absolutely no direct injury to the abdomen. He said that indirect injury was frequently just as enigmatic as were subjective symptoms.

DR. WEBB said that two months ago the question of traumatic hyperthyroidism was discussed in this society and now it appears that appendicitis is also being included in traumatic surgery. He said that he could conceive of traumatic appendicitis if at operation the appendix were found lying across the vertebral column and injured by being crushed between the spine and some hard object.

Dr. Webb recalled the Bastedo test in which the colon was routinely inflated and then suddenly further inflated in suspected chronic appendicitis in order to elicit pain in the appendix. He had never seen any ill effects from this procedure which was a routine test a few years ago.

DR. WILLARD WHITE (in closing) said he appreciated the discussion and felt that the subject was important enough to warrant very careful consideration. He realized that bringing up the question of trauma to the abdomen and subsequent development of appendicitis might furnish occasion for plenty of argument in a great many cases, but the main purpose of this discussion was to call attention to the fact that there really is such a thing as traumatic appendicitis and the mechanism of its production can be easily understood. He mentioned the fact that other writers, particularly Luddington, had called attention to the fact that confusion about this subject sometimes arises concerning what is meant by trauma and traumatic appendicitis. Small foreign bodies within the appendix might give an irritation to the mucous membrane of the appendix, and when the appendix is removed and examined under the microscope the pathologist might return a report of foreign body in the appendix with production of a traumatic appendicitis, whereas from the clinician's standpoint this would not be a traumatic appendicitis. In this article he means traumatic appendicitis is an appendicitis which develops following an injury to the abdomen in the form of some external violence or unusual force or strain being applied to the abdomen, and, as stated in the main substance of the article, this force cause increased pressure in the cecum forcing the material into the appendix. Under suitable conditions when this fecal material cannot be returned to the cecum and is retained in the lumen of the appendix, stasis results with subsequent distention of the appendix and interferes with the blood supply, so that gangrene of the wall of the appendix follows. This is what is meant in this discussion by traumatic appendicitis. It is no argument to state that many people receive blows on the abdomen and do not develop appendicitis as a result, as the condition within the appendix has to be suitable so that a definite train of events can occur.

DR. A. T. MANN presented a case of fracture of the clavicle in which there was an autograft two inches long. It was four months old, and had healed firmly with a perfect line for the clavicle. The clavicle was slightly increased in size in the region of the fracture and the autograft, as was to be expected. (Patient present.)

The fracture at the junction of the middle and outer thirds of the clavicle had been received in a football game, in which the knee of the opponent had slid under the shoulder guard and directly upon the region of the clavicle. This had broken the bone and snapped out a piece of the clavicle two inches long and almost the entire width of the bone, leaving only a thin, curved, spearlike projection on the upper margins of the two main fragments, with the loose two-inch fragment between and below them with all of the parts considerably displaced.

At the time of the operation, the loose fragment was found entirely detached from all tissue and came out of the wound freely into the hand. This fragment was the best bonegraft one could have. It would fit into the defect after reduction of the displacement and it belonged to the patient with all his personal idiosyncrasies of serum and of cellular tissue. So it was used as an autograft. The bones were "wired" into place with forty-day chromic gut. Dressings were applied and the shoulders were fastened to a straight splint placed dorsally between them. There was firm union now at the end of four months and the clavicle is smooth and the outline seems practically perfect.

DR. MANN stated that three months to four months seems to be the time in which a bone graft of this size takes to be entirely replaced by new bone. He spoke of the care with which a bone graft ought to be handled.

Some small portions of the graft continue to live and to help produce bone, although most of the graft is replaced by bone formation growing into it as it gradually melts away. For this reason he thought that, theoretically at least, a living graft is better than a preserved graft, and an autograft is better than a piece taken from another person or an animal because of the identity of its cells and serum reactions.

In handling a graft at the time of an operation, DR. MANN thought there were two main considerations to keep in mind to prevent damage to the graft and loss of vitality: first, to put it into surroundings as nearly normal as possible, and, second, to prevent its becoming dry. Both of these can be accomplished by placing the graft immediately into normal saline at body temperature, sometimes, even better, by covering it completely under one of the operative flaps until it is used.

In regard to the method of bone replacement when a graft is used, DR. MANN referred to a

series of experiments made by him in 1915-16 to determine the behavior of autografts of the condyles in knee joints. He read one of the conclusions given in the reprint, which referred to this question, as follows: "The main replacement of the bone in the trabeculae seems to take place directly from bone cells without the preliminary formation of cartilage, and the dead portions of the trabeculae seem to be absorbed in a line immediately adjacent to the new growing bone without the intervention of special osteoclasts."

DR. R. F. MCGANDY read his inaugural thesis entitled "Electrical Burns and Shock."

DISCUSSION

DR. J. F. CORBETT said he would like to ask if there is any rule as to the number of hours respiration should be kept up in these cases?

DR. A. L. HERMAN stated that there is one other measure which is of value sometimes in these cases and that is subcutaneous injection of oxygen. When there is merely paralysis of the respiratory muscles quite large amounts of oxygen can be absorbed. The oxygen can be filtered through sterile cotton and administered just as one would give normal salt solution. It is very readily absorbed and may tide the patient over the period of respiratory paralysis.

DR. MANN asked whether these electrically shocked men have a change in their time of development of rigor mortis.

DR. WEBB stated that in a movie shown to the employees in the electrified section of the Great Northern

Railroad the employees are instructed to keep up artificial respiration in apparently electrocuted persons even after the doctor tells them they may cease.

DR. MCGANDY, in closing, said concerning Dr. CORBETT's discussion that power companies have spent tremendous sums of money in order to reduce mortality rates in electrical accidents. Every man is taught the prone pressure method of artificial respiration. This teaching is not merely a lecture course, but every man is required to actually demonstrate prone pressure on his fellow employees. The greatest trouble that is encountered in this region is apparently interference by physicians who are not thoroughly acquainted with electrical shock. They usually stop artificial respiration too soon. The employees, on the other hand, are taught to continue artificial respiration until rigor mortis sets in if breathing does not start sooner. Many cases are reported where breathing followed hours of artificial respiration.

Concerning the subcutaneous injection of oxygen, Dr. MCGANDY stated that while it is a good measure its use is impractical. In the first place, to secure the best results it should be started and used immediately, which means that the apparatus should be in the hands of many employees. In the second place, no employee would know how to use it properly, it being a purely medical measure. On the other hand, in large institutions where a doctor is in constant attendance, it is a practical measure.

Concerning the change in time of rigor mortis, Dr. MCGANDY stated that in his review of the literature this question was not answered.

The meeting adjourned.

H. O. MCPHEETERS, M. D., Secretary.

PROCEEDINGS MINNEAPOLIS SURGICAL SOCIETY

Meeting of February 5, 1931

DR. A. T. MANN, President, presiding.

The annual banquet of the Minneapolis Surgical Society was held at the Nicollet Hotel on the evening of February 5, 1931. The President, Dr. A. T. MANN, presided and introduced the guest of honor and speaker, Dr. CLAY RAY MURRAY, Associate Professor of Surgery at Columbia University. The title of Dr. MURRAY's address was "Delay and Nonunion of Fractures." There were 36 members and 44 guests present.

During Dr. MURRAY's visit in the city he gave a talk before the Hennepin County Medical Society on "The Proper Use of Physiotherapy in the Treatment of Fractures," and also presented his "talkie" on "The Treatment of Angle Fractures."

On Thursday morning Dr. MURRAY conducted a clinic on fractures at the General Hospital, which was of unusual importance in view of the fact that Dr. MURRAY discussed the actual treat-

ment of the cases at hand. On Thursday afternoon he addressed the medical students of the University in the Anatomy Amphitheater, speaking on the "Modern Conception of Bone Formation in the Adult and Its Bearing on the Clinical Treatment of Fractures." These meetings were open to the general profession, were unusually well attended, and the talks were received with much enthusiasm.

The formal banquet meeting at the Nicollet Hotel was for the members of the Surgical Society and their invited guests. In addition to the paper, Dr. MURRAY told of their work, both experimental and clinical, at the Presbyterian Hospital in New York City, and, in closing, extended a cordial invitation to any of the physicians who came to or near New York City to come to the Hospital and observe the work that is being done there.

H. O. MCPHEETERS, M.D., Secretary.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of March 11, 1931

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 11, 1931. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, DR. J. S. GILFILLAN. There were 51 members present.

Minutes of the February meeting were read and approved.

The scientific program of the evening was as follows:

DR. A. R. COLVIN (St. Paul) reported two cases and showed specimens.

Case 1. Gall bladder in female pelvis. The patient, a woman aged 72, was first seen December, 1929, complaining of a mass in the lower abdomen, it was painless, not tender, and quite movable. She was concerned because of the tumor but did not want to consider surgery because it did not cause any pain. She was of the rather feeble type for 72, and surgery was not urged at that time. Nevertheless, a diagnosis of the nature of the mass was not made.

In April, 1930, she says she began to have some "heavy discomfort" in the abdomen, but no pain. In June, 1930, she says she began to have attacks of pain which she attributed to food and she said that recently the tumor would disappear at times, and at these times she felt better.

When seen in early November, 1930, she had an attack of abdominal pain followed by jaundice. The pain continued intermittently, and the jaundice became deeper. The tumor had disappeared but she felt some pressure in the pelvis.

Examination revealed a fluctuating mass filling the pelvis. She had quite a kyphotic spine and a consequent approximation of the ribs to the iliac crest. There was no abdominal tenderness. The combination of jaundice and pain suggested common duct stone and the opinion was hesitatingly expressed that the mass in the pelvis could be an enlarged gall bladder.

Her enfeebled condition would render surgery extremely risky and it was not undertaken. She died two weeks later. A partial autopsy showed a gall bladder about the size of a small grapefruit packed tightly in the pelvis, and it was withdrawn by some effort. A small calculus was found in the common bile duct. The duct was not appreciably dilated; the cystic duct proximally was dilated to the size of a rather large sausage; distally, just proximal to the common duct, the cystic duct was surrounded by a mass

of firm tissue, and an area of indurated tissue, scirrhous like in appearance, occupied the anterior wall of the gall bladder at about its center.

The histological examination of the tissue surrounding the cystic duct shows clearly an adenocarcinomatous structure.

Case 2. Tumor in the cecum. The patient, P. S., female, aged 34, complained of pain in the right lower abdomen, and of feeling "all in." In 1916 while at college she was ill for three months and miserable for some time afterwards. She had pain in the abdomen at that time. She came home from school and was in bed four months with tenderness, abdominal pain, fever, and chills. Following this she was better and had no fever, but had soreness and painful spells.

Five years ago during and after pregnancy she had pain and soreness. In March of 1930 she had fever and pain. During menstruation the pain was not so bad, but soreness was present all the time. She had spells of pain off and on about every two months, which made her feel all in. She says they were something like "labor pains."

On examination there was some tenderness in the right lower abdomen. Bimanually there was a tender mass at the right of the uterus and thickening extending laterally.

At operation a midline incision was made below the umbilicus. On opening the peritoneal cavity a tumor was felt in the cecum and found to be movable in the cecum. The cecum was densely adherent by old tough adhesions to the uterus and right tube. On separating these, the cecum was opened and the tumor exposed. Its attachment was to the posterior wall of the cecum, but it was found that the base of the tumor was continuous with the right ovary, which was, however, partly within and partly outside of the cecum.

To visualize the condition one would have to imagine an opening having been made in the posterior wall of the cecum. The diseased ovary now inserted into the opening with a subsequent closure by adhesions of the edges of the cecal opening to the diseased ovary and a consequent closure of the cecal opening in this manner. There must have been a gradual perforation of the cecal wall by the inflammatory mass containing the ovary.

The tumor mass inside the cecum was composed of tuberculous granulation tissue with some ovarian tissue at its base. The ovary was, of course, tuberculous as was also the right fallopian tube. The cecum, except for the mass projecting

through and into its lumen was quite normal, the mucous membrane presenting no evidence of disease.

The closure of the opening in the cecum took place without untoward happenings and the patient is now free from pain and has gained 20 pounds.

DR. C. N. SPRATT (Minneapolis) reported the following case:

I wish to show a specimen of an eye containing a piece of steel which has been there for 67 years without causing any irritation or discomfort. This man consulted me for a cancer of the larynx, when it was noticed that the right eye diverged. Upon questioning, the patient stated that when he was twelve years of age, while he was in a blacksmith shop, something hit his right eye. An X-ray showed the presence of a foreign body, and in spite of the divergence it was localized to be in the bottom of the vitreous near the ciliary body. This man died in December, 1930, and through the courtesy of the family physician and with the consent of the deceased's sons, the eye was removed. This was sectioned and I have it here.

I think this is particularly interesting because it shows three things:

1. It shows that a foreign body may remain in the eye without causing irritation; the eye was blind but absolutely free from irritation.

2. The shadow is definite in the X-ray, the steel in the metallic form and not oxidized. It is probably a piece of wrought iron which resists corrosion.

3. It shows that even in a diverging eye, localizing a foreign body can be accurately done.

DR. WALTER E. CAMP (Minneapolis) read his inaugural Thesis entitled "The Pathology and Pathogenesis of Ocular Melanomata." Numerous lantern slides were shown.

DISCUSSION

DR. JOHN F. FULTON (St. Paul): I am more anxious to congratulate this Academy upon having Dr. Camp become a member than to enter into a discussion of his very excellent thesis. The doctor is not only a teacher of medical students, but a very competent instructor of the oculist himself. He has very competently and thoroughly discussed tonight one of the most important and serious subjects that the oculist is called upon to deal with. The title of the thesis is somewhat misleading. Melanoma, as defined by Collins, is an innocent pigmented growth in the uveal tract which may become malignant. These apparently innocent accumulations of pigmented cells, by trauma of some unknown cause, at times take on a malignant growth of the fulminating type which may not only destroy the patient's eye, but also his life. The pigment proliferation usually originates from the epithelium of the deeper structures but may also originate from the choroidal cells.

There is a condition closely related to this, namely, melanosis, which is a deposit of pigment in structures where it is not usually found, as the cornea and conjunctiva. This condition is not necessarily malignant but is potentially dangerous, for the literature on the subject demonstrates that 30 per cent of such cases become malignant.

DR. E. M. JONES (St. Paul) read a paper and reported cases of phlegmonous enteritis.

DISCUSSION

DR. H. B. ZIMMERMAN (St. Paul): I have never seen a case such as Dr. Jones described. In regard to the second case, not long ago I had a man come to the hospital with pain in the right lower abdomen, and fever. A diagnosis of appendicitis was made and at operation a small inflamed appendix was found. Just proximal to the ileocecal valve he had a peculiar condition. It looked like sigmoid. It felt exactly like the sigmoid and contracted normally to stimulation. The wall was about one-half an inch thick and fairly normal. It looked like a bit of intestine that had worked against obstruction for a long time. Since then he has had two other attacks of cramps in the right lower quadrant of the abdomen.

In going over the man's history, he told me that he had had a very severe attack when he was in the army. He had violent pain but the surgeons did not think it was exactly appendicitis and were rather confused about it. He got well without an operation.

I spoke to DR. JONES about this patient and he suggested that it might have been phlegmonous enteritis.

DR. A. R. COLVIN (St. Paul): I showed a specimen here some two years ago of phlegmonous duodenitis which bears out the remark made by DR. JONES, that this is a fatal disease. My patient was a woman who entered the hospital very acutely ill. It was thought she had some upper abdominal trouble. At operation the duodenum was found to be thickened and there was general peritonitis and a phlegmonous inflammation of the duodenum extending from the pylorus to the duodenal jejunal junction, and the mucosa was fairly studded with small superficial ulcers.

In looking up the literature at that time, I found that Melchoir, writing on surgery of the duodenum in *Neue Deutsche Chirurgie*, could find only ten cases reported in the literature. Dr. John Noble told me later that the newer references were more numerous.

DR. JOHN NOBLE (St. Paul): (by invitation): Phlegmonous inflammation of the gastrointestinal tract is a rare disease. It is found more frequently in the stomach and large intestine than in the small intestine and, as DR. JONES has pointed out, the proximal portions of the small intestine are more commonly involved than the distal portions. While the rarity of this disease cannot be questioned, it undoubtedly occurs more frequently than the reports in the literature would indicate. In our series of autopsies at the Ancker Hospital we have seen two cases of phlegmonous enteritis. One of these DR. COLVIN mentioned and the other was the first case reported by DR. JONES.

The etiology of the condition is not clear, but as a rule there are certain predisposing factors, the most common of which are preëxisting ulceration of the mucosa, general sepsis, intestinal obstruction or trauma. DR. JONES' first case is evidently a manifestation of a systemic infection, while his second case appears to have followed a partial intestinal obstruction.

I think the principal value in reporting these cases is to familiarize the practicing surgeon with the gross appearance of the lesion so that he will recognize it readily when he encounters it at the operating table. Once having seen the lesion it can be confused with few other conditions. It slightly resembles a scirrhus carcinoma, but its inflammatory character and the difference in consistency make this differentiation easy. It may also be confused with a diffuse leukemic infiltration or a diffuse lymphosarcoma, but in both of these conditions evidences of inflammation are usually absent.

From the cases reported here this evening there seems to be definite clinical evidence that phlegmonous enteritis can vary considerably in intensity, and that, in some instances at least, recovery occurs without radical surgical interference. The recognized surgical procedures are resection of the involved gut or intestinal anastomosis, short circuiting the inflamed segment. The first procedure seems more rational since it removes the focus of infection and reduces the possibility of general peritonitis, and these cases die of a general peritonitis. The suggestion made by DR. JONES that an enterostomy proximal to the lesion might be the method of choice in some instances, would seem to be more reasonable than a short circuiting anastomosis.

DR. A. E. BENJAMIN (Minneapolis): I want to report one case which is rather interesting in this connection, which I operated upon about a year and a half ago. The patient was a farmer's son, twenty-five years of age, who gave a history of having severe pain and distention of the abdomen, with nausea and vomiting and some fever. The pain was not confined to the region of the appendix but more to the left and opposite the umbilicus. He came in to see me and I put him through quite an examination, including x-rays, but could not determine just what the trouble was. I decided to do an exploratory operation. A median incision, going by the umbilicus, was made and I found two sections of the lower portion of the jejunum, one about six inches and the other about eight inches, covered with fibrinous exudate. This was more or less acute in character because he had just gone through an attack, and there was definite partial obstruction. There was a question as to whether or not to do a resection. I did not think it was malignant; there was no diverticulitis nor any other inflammatory condition in the abdomen that could account for this pathology. So I separated a few of the adhesions and sewed him up. He was put on a special diet and sent home. He has had one attack since, but as long as he keeps on a very careful diet, with no coarse foods, he remains in very good condition and apparently perfectly well. That was a case in which I think the right treatment was to let him alone.

DR. ARNOLD SCHWYZER (St. Paul): While DR. JONES was reading his paper three cases of this type came to my mind. I wonder whether the second case DR. JONES described was really phlegmonous enteritis. It may have been a simple inflammatory thickening. In the course of operation for acute appendicitis in two cases I saw an area of the lowest ileum thick, fleshy, and rigid. In one case this area was about 6 cm. long, ending a few centimeters above the ileocecal valve. In the other case the involved area was from 12 to 15 cm. long. We removed the appendix and the patient got well without any trouble, though we had been quite apprehensive as to the outcome. In a third case where we had a mass in the cecum, we found that the process of hardening and thickening reached about 10 cm. up into the ileum. An ileocolic resection was made. The specimen showed it was tuberculosis. That case came to good recovery.

DR. JONES (in closing): I appreciate very much the discussion of this paper. It seems that the cases DR. SCHWYZER mentions fall in the group of phlegmonous enteritis but undoubtedly of less virulence. In the second case I reported, it seems that resection would have been quite radical and therefore I just relieved the obstruction. Resection is advocated as the operation of choice, but, in view of the fact that anastomosis of the intestine above and below the lesion without resection has led to recovery, it seems to me that in cases where a resection is desirable, but not feasible, an enterostomy placed proximal to the affected bowel would be desirable.

In mild cases where one can find definite cause for the infection I believe that merely removing the exciting cause will be sufficient.

DR. ARNOLD SCHWYZER (St. Paul) reported the following case:

A man came to my office with a swelling in the midline in front of the hyoid and thyroid cartilages, a plain case of cyst of the thyroglossal duct. It could be removed without breaking it. It was thin, walled, the content slimy. At the upper posterior pole toward the corpus of the hyoid bone it had been firmly adherent. We know that there is usually a little tract running through the hyoid bone, or just grazing the periosteum. It is, therefore, unsafe to leave this median portion of the hyoid bone. Sistrunk quite properly advised to follow the track of the thyroglossal duct up into the tongue. We resected the hyoid bone and found a thin tract which we followed for about 2 or 2.5 cm. It could be easily demonstrated as a grayish cord-like structure. It then became very thin and tore off (shown on drawing). Not being quite satisfied, I forced the finger into the musculature of the tongue and then with one finger in the mouth I palpated the parts between the two fingers. To our surprise we found a round mass of the size of a large cherry stone. With fine artery forceps inserted into the wound, the mass was gotten hold of. It seemed to break and we saw a little lake of whitish slime. The area in the musculature of the tongue was excised with scissors. This little mass was located directly under the mucosa of the tongue. Microscopically there was a larger cyst, in the neighborhood of which there were several tortuous little tubules with pavement cell lining. The mass was located under the foramen cecum of the tongue, where the thyroid anlage originates. Had this congenital epithelial formation gone to a little further development, we would have had a lingual thyroid. It has been observed that a lingual goiter will grow after thyroidec-tomy. In one reported case, the tumor grew in a compensatory sense. But it grew so much that it made trouble and had to be removed, and, after its removal, it seems that myxedema showed up.

The meeting adjourned.

R. T. LA VAKE, M. D.
Secretary.

BOOK NOTICES

ABDOMINO-PELVIC DIAGNOSIS IN WOMEN. By A. J. Walscheid. St. Louis: Mosby and Co. 1931.

This 1,000 page volume is presented for the post-graduate student and the general practitioner and as a reference book for the medical student. The contents are divided into "General Gynecology" and "Special Gynecology." The author has endeavored to give an anthropologic basis as essential to diagnosis.

The first 350 pages are taken up with "General Gynecology," and the introduction of 60 pages refers frequently to Jayle's "Morphology of the Human Female." Etiologic factors, general symptomatology, gynecologic examination and diagnosis are fully discussed in the remainder of this division of the book.

"Special Gynecology" discusses the pathologic anatomy and pathologic physiology of the external genitals, vagina, cervix, uterus, tubes, and ovaries. This part of the book includes chapters on diseases of the pelvis, urinary tract, abdominal wall and viscera, and of the anus and rectum.

The book is primarily concerned with diagnosis, and the author has kept to his subject, mentioning only such therapeutic methods as are included in diagnostic procedures. He has submerged his personal experiences in order that a general view of the diagnostic procedures used by many leading gynecologists can be presented. A large amount of material is utilized, and well selected illustrative cases add value to the contents. Medico-legal aspects of special subjects are discussed here and there. The illustrations are generally well selected and generous in number, although the author states that he has not intended that the volume be a picture book.

There is an erroneous quotation of statistics in the discussion of interstitial pregnancy. The author does not mention trichomonas vaginalis vaginitis either to agree or to disagree with those who believe that the trichomonas is an important etiologic factor in the production of vaginal inflammations. In the chapter concerning diseases of the urinary tract, collargol is prominently mentioned as one of the pyelographic media, but there is no warning of the toxicity of this substance which has been superseded in most clinics, for some fifteen years, by equally satisfactory drugs which are practically nontoxic. Intravenous urography is not mentioned. The lesion described by Hunner as elusive ulcer of the bladder, deserves a paragraph in a volume of this character, as the diagnosis is difficult for the average urologist, and most of the patients suffering from this distressing condition have had their various genital organs removed or altered on suspicion.

The publishers have produced a fine volume in every way except a rather light binding for so large a tome.

I am sure, interested physicians will find phases of gynecological diagnosis discussed in this book that will not be found in the usual textbook of gynecology.

H. M. N. WYNNE, M.D.

NEW TREND IN THE DIET OF INFANTS

(Continued from Page 288)

years. They have both been progressing exceptionally well on this diet. The yolk may be ground up and introduced into any article of food. We have found egg yolk especially valuable in cases of anorexia, or in conditions requiring a

concentrated feeding. Cases of pylorospasm gain well on a concentrated milk like dubo, and egg yolk.

The clinical and experimental observations of many men tend to show that both banana and egg yolk may be safely incorporated into the diet of the average healthy infant. An added food, well tolerated and easily digested, should be welcomed by physicians responsible for the welfare of the baby. Any unsound prejudice should give way before the scientific proof of the value of these foods.

It would therefore seem reasonable to draw the following conclusions:

1. Ripe banana and egg yolk are efficient, easily assimilated, and desirable additions to the diet of infancy.
2. Ripe banana pulp may be safely given to babies as early as the third month of life.
3. Egg yolk, raw or hard boiled, may be added to an infant's diet whenever a complementary feeding is indicated.

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NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. Mabel Ulrich, Minneapolis, is away for several months on a vacation in Europe.

Dr. G. W. Setzer, formerly located at Helena, is now in active practice at Malta, Mont.

Dr. B. B. Sedlacek, formerly in practice at Oberon, N. D., is now located at Fort Totten, N. D.

Dr. C. Alford Fjeldstad has been named as chief of staff of the Fairview Hospital, Minneapolis.

Dr. Carl Voss, Hettinger, N. D., has gone to New York where he will spend two months in postgraduate work.

Dr. D. E. Nelson, Minneapolis, has moved to Graceville, Minn., where he has opened offices for general practice.

Fargo is ranked as one of the healthiest cities in the United States, being fifth on the list of cities from 20,000 to 50,000.

Dr. F. M. Joslin, a recent graduate of the University of Minnesota, has opened offices for general practice at Frankfort, S. D.

Announcement has been made of the engagement of Dr. B. E. O'Reilley, Minot, N. D., to Miss Mary M. Loftus, St. Paul.

Miss Harriet O. Stacey has been named as superintendent of the Marcus Daly Memorial Hospital, at Hamilton, Montana.

Dr. D. F. Dumas, formerly located at Deer River, Minn., has moved to Bemidji and is associated with Dr. Diedrich in general practice.

Dr. H. E. Drill, formerly located at Battle Lake, Minn., has moved to Hopkins, Minn., and opened offices for general practice.

Dr. C. A. Stewart, Minneapolis, presented a paper on "Tuberculosis in Children" last month before the American Pediatric Society at Biloxi, Miss.

Dr. J. A. Peterson, Rochester, Minn., has moved to Red Wing and is now an active member of the firm of Drs. Johnson, Steffens and Peterson.

Dr. C. E. Spicer, Valley City, N. D., has moved to Long Beach, Calif., where he will be with the

Boyd Clinic, as head of the eye, nose and throat department.

Dr. G. L. Gosslee, Moorhead, Minn., one of the leading physicians of that city, has been named as resident director of the Moorhead State Teachers College.

Dr. H. L. Lamb, Little Falls, Minn., has received an appointment on the staff of the Royal Eye Hospital, London, England. He sailed from Montreal on May 1.

The new \$500,000 Bethesda Hospital, St. Paul, will be erected this season. It will be strictly fire-proof, modern in every way, and space for 150-175 beds will be provided.

Dr. W. Stuart Leech, one of the prominent physicians of Roseau, Minn., died recently from heart disease. He had been in active practice for over twenty years in that city.

Dr. F. E. Bunting, one of the pioneer physicians of Mandan, N. D., is seriously ill from the effects of an operation at a Minneapolis hospital for the removal of toxic goitre.

Drs. E. P. Quain and J. O. Arnson, Bismarck, were among the leading northwestern physicians who recently attended the annual meeting of the American College of Physicians held at Baltimore.

Dr. Owen H. Wangensteen, professor of surgery at the University of Minnesota, conducted two surgical clinics for members of the Grand Forks District Medical Society at Grand Forks last month.

Dr. W. B. Parrott, who has been in active practice for many years at Long Prairie, Minn., died recently at the age of 62 years. He was a graduate of the University of Minnesota Medical School in 1896.

Thirty-two clinics will be held, and from 800 to 1,000 physicians will be present at the seventy-eighth annual meeting of the Minnesota State Medical Association to be held in Minneapolis, May 4, 5 and 6.

Dr. R. C. Rasmussen of Drake, N. D., returned recently from a four months' trip to Europe. Three months of this time he spent at the State Hospital for Cripples at Copenhagen, Denmark, doing post graduate work.

The Sioux Falls District Medical Society held their April meeting at Sioux Falls and were addressed by Dr. O. C. Ericksen on "Spinal Anesthesia," and Dr. T. J. Nessa on "Roentgenological Studies of the Thymus."

Dr. J. Warren Bell, Everett, Wash., and son

of Dr. J. W. Bell, Minneapolis, has been named as one of the staff at the Childs Hygiene in Cattaraugus County, N. Y. Dr. Bell is a graduate of the University of Minnesota.

The largest meeting of the season was held by the Red River Valley Medical Society at Crookston, Minn., last month. Drs. J. R. Manley, Duluth; G. S. Wattam, Warren, and O. E. Locken, Crookston, were the principal speakers.

Dr. C. A. Wicklund, Wildrose, N. D., has retired from active practice on account of the recent accident by which his left hand was amputated. Dr. Wicklund was made an honorary member of the Kotana Medical Society.

Dr. August Eggers, Grand Forks, N. D., will spend a year in Europe, spending the summer in Norway and the fall and winter months in study at the hospitals in Berlin, Vienna, and Paris. Mrs. Eggers will join the doctor later on.

The Southern Minnesota Medical Association will hold their annual meeting this year at Faribault, Minn., on August 24th. A very interesting program is now being prepared, which will be published in a later issue of this journal.

Dr. E. A. Rehnier, Minneapolis, was the principal speaker at the last meeting of the Watertown Medical Society, at Watertown, S. D., his topic being, "The Surgery of the Abdomen." Dr. P. D. Peabody, president of the State Association, was a guest of the society.

Mrs. George C. Christian, of Minneapolis is the only woman on the list of four honorary members of the American Association for Cancer Research. Mrs. Christian received the distinction because of her endowment of the cancer hospital at the University of Minnesota.

Lymanhurst School, Minneapolis, the first day school in the world for tuberculosis children, recently celebrated its tenth anniversary of its founding. A large number from outside of the city, all being national authorities on tuberculosis, were present as guests of the Hennepin County Society.

Dr. Charles R. Drake has filed as a candidate for the Minneapolis School Board, at the coming June election. Dr. Drake would make a most valuable member of the school board, as he is qualified in every way to fill the office and his many friends in the city, should do a little extra work in his behalf.

The American Society of Clinical Pathologists has formulated a standard for Laboratory Tech-

nicians and is conducting a registry of present technicians. It is unfortunate that at present there is no regulation nor standard of requirements by which the Schools of Medical Technology may be controlled.

Dr. Sever Vinje of Hillsboro, Traill County, N. D., health officer, has been ranked as first in "Who's Who in Public Health Work in North Dakota" by the State Health Department. Dr. J. F. McKay of Bowesmont, Pembina County health officer, was ranked second. The scoring is based on efficiency of operation of a public health office.

The seventh annual meeting of the North Dakota Health Officers' Association will be held at Bismarck, May 1 and 2. City and county health officers, health board members, nurses and others interested in public health are invited to attend the convention, according to Dr. A. A. Whittemore, director of the state department of public health.

Fifty members of the Mount Powell Medical Society held their monthly meeting at Deer Lodge, Mont., the following program being presented: Dr. A. F. Foss of Missoula gave a paper on "Coronary Thrombosis" with lantern slide illustrations. Dr. C. S. Powell presented a case of "Erb's Paralysis and Fracture of the Humerus at Birth." Dr. F. L. Unmack, demonstration skin case. At the conclusion of the meeting, luncheon was served.

The spring meeting of the Yankton District Medical Society was held at Vermillion, S. D., last month. There were fifty-five at dinner including the Ladies' Auxiliary of the Society. The guest of honor for the Auxiliary was Mrs. T. J. Billion of Sioux Falls, President of the Ladies' Auxiliary of the State Association. After the transaction of the business of the Society, the following scientific program was rendered: First, Some Considerations in the Modern Treatment of Heart Disease, by Doctor Fredrick A. Willius, of Rochester, Minn.; second, Relationship of Asthma to Otolaryngology, by Doctor D. M. Lierle, of Iowa City, Iowa. Both subjects were pretty well discussed by the doctors present. Doctor Lottie G. Bigler, Yankton, reported a case of Congenital Ablephary with accessory ear lobes and marked torticollis.

MINNESOTA STATE MEDICAL SOCIETY SPECIAL ANNOUNCEMENTS

The first "talkies" on scientific subjects ever shown in connection with a Minnesota State Medical Association meeting will feature exhibits at the 78th annual meeting of the association at the Nicollet Hotel, May 5 and 6.

Exhibits are to be a very important part of this meeting the program committee says. Wherever possible they will illustrate papers read on the scientific program. The Southern Minnesota Medical Society will offer a gold medal, following its precedent set last year, to the best individual exhibit offered at the meeting.

Phi Beta Pi will hold a luncheon meeting Wednesday noon, May 6, in the Francis I room at the Nicollet Hotel.

The annual luncheon meeting of the alumni of the University of Minnesota Medical school will take place in connection with the annual meeting also. It will be held in the Parlor A, Wednesday, May 6, at the Nicollet Hotel.

The scientific program for the 78th annual meeting of the Minnesota State Medical Association which is to be held at the Nicollet Hotel in Minneapolis, May 5 and 6, is divided into four distinctive sessions.

The Tuesday afternoon session, will be made up entirely of clinics at the University hospitals. A total of 32 clinics all on different subjects to run continuously in four hospital amphi-theaters have been arranged for this University session. The others will be devoted to surgery and obstetrics Tuesday morning; diagnosis, Wednesday morning and therapy Wednesday afternoon. These sessions will be held in the ballroom of the Nicollet Hotel. Exhibits relating intimately to program subjects are to be another special feature of the meeting. The entire mezzanine floor of the hotel will be devoted to them. They will include, among other things, the first talking pictures on scientific subjects ever secured for these meetings. Following the precedent set last year, the Southern Minnesota Medical Society will present a gold medal for the best individual exhibit submitted.

The annual banquet, scheduled for Tuesday night will have the Hon. W. I. Nolan, Minneapolis, for principal speaker. The Women's Auxiliary to the State body will join with the physicians for this occasion, having arranged its annual meeting to coincide as usual with the medical meeting.

ATTENTION NORTH DAKOTA PHYSICIANS

The North Dakota Legislature of 1931 enacted an Annual Registration Act for Physicians, licensed in the State, effective July 1, 1931.

In order to make this act effective it is necessary to have the name and address of every Physician in North Dakota. Will you help by mailing AT ONCE your name and address to the office of the State Board of Medical Examiners, at Grand Forks.

The annual fee is \$5.00 for those practicing in the State and \$2.00 for those living outside of the State. First registration is payable August 1st, 1931, and on January 1st each year thereafter.

Registration blanks will be mailed on July 1st, and on receipt of the registration fee an Annual card will be mailed.

Your Co-operation is of vital importance to the future of Medicine in North Dakota.

CLASSIFIED ADVERTISEMENTS

For Rent

Doctor's office occupied by prominent physician. Office elegantly equipped. Individual treatment room, laboratory, etc. Reception room is shared with dentist and other physician. A new up-to-the-minute medical building, located in one of best business intersections of good residential district. This is an unusual proposition and must be seen to be fully appreciated. Address Box 810, care of this office.

Registered Nurse—Laboratory Technologist

Graduate experienced nurse of a Minneapolis Hospital with a post graduate course in medical technology, X-ray and physio-therapy, wishes position in hospital clinic or doctor's office. Able to do stenographic work. Good references. Address box 817, care of this office.

For Sale

Small rural hospital all modern, worth \$25,000, will sacrifice for \$16,000. Instruments and equipment included. \$5,000 cash and balance on time at 6 per cent. Address box 818, care of this office.

For Sale

Large general practice, unopposed, modern town, thrifty diversified farming community. Eastern South Dakota. Practice averages over \$9,000. Beautiful modern home for sale or might consider leasing. A real opportunity. Address box 826 care of this office.

For Rent

Splendid opening for young doctor or for doctor contemplating moving into city in new office on busy intersection. Waiting room is shared with busy, established dentist. Equipment is all brand new of 1931 design. Rent reasonable. Competition in neighborhood light. For particulars address box 820, care of this office.

Physician Wanted

North Dakota town of 300, good prosperous community. No doctor in town for over six years. Nearest doctor 20 miles. Wonderful opportunity to build a good profitable practice. For further information write Wales Commercial Club, Wales, North Dakota.

Locum Tenens Wanted

Interne, 27 years old, finishing training in large municipal hospital June 20. Desires Locum Tenens work for a few months. Licensed in Minnesota. Photograph and references furnished. Address box 822, care of this office.

Laboratory Technician

Competent young lady with five years' experience in X-ray, laboratory and nursing, would like position in Clinic, Hospital or Doctor's office. Twin Cities only. Excellent references. Address box 823, care of this office.

For Sale

Clinical volumes, North American Medical and Surgical, July, 1917, to December, 1929, Chicago Medical and Surgical, July, 1915, to December, 1920, Murphy, February, 1914, to December, 1916, Mayo, 1917 to 1930. All in good condition. Address Mrs. T. B. Smiley, Mt. Vernon, S. D.

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ELECTROCARDIOGRAPHY: A BRIEF GENERAL CONSIDERATION*

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The electrical properties of tissues were first accurately described by du Bois and Reymond in 1843. It is well known that when a muscle is removed from the body and one end is cut off the cut portion has a different electrical potential from that of the uninjured longitudinal surface. The cut end is electronegative, and the longitudinal surface is electropositive. If the cut end and the longitudinal surfaces are connected by conducting wire or conductor, a current will flow from the longitudinal surface to the cut portion. This current is known as the current of injury and the current of demarcation.⁶

Electrocardiography actually depends on a well-known physiologic law, namely, that when any muscle is stimulated the stimulated portion contracts and the contracting portion has a different electrical potential from the resting portion. Kölliker and Müller, in 1856, were the first to demonstrate action currents in the heart. Waller, in 1887, by means of a capillary electrometer, first showed it possible to register the heart beats of human beings.

The principle of the galvanometer is based on the fact that a magnet, and a current passing through a wire in the vicinity of the magnet, will interact. There are several well-known types of galvanometers; the Kelvin reflecting galvanometer and the d'Arsonval are two of the best known types. They consist of a small magnet, to which a mirror is suspended by a fine thread. The magnet

is surrounded by coils of wire, and when currents pass through this wire, the magnet will deflect the mirror. The beam of light, reflected from the mirror, records the movements.

Einthoven, in 1903, introduced the string galvanometer, which was built on the opposite principle from that of the earlier galvanometers. In this galvanometer a delicate, straight conducting fiber lies between the two poles of a powerful magnet. Currents passing through this string or fiber cause it to deflect. The movements of this string are recorded by projecting its shadow on a camera mechanism.⁷ The modern electrocardiograph differs markedly in mechanism, but the principle is identically the same as that of the old string galvanometer.

Several very satisfactory makes of electrocardiographs are now in use. Those in use in The Mayo Clinic consists of two main parts: the electrocardiograph proper and the power unit. The electrocardiograph proper consists of three tube amplifiers, a reflecting galvanometer and photographic recording instrument, a source of light and mirrors, a device for recording units of time, and resistance coils and switches to connect patient with instrument. The power unit consists of one 6-volt storage battery and a 151-volt dry cell battery. These batteries are practically identical with radio A and B batteries.

LEADS OR DERIVATIONS

Electrocardiographic curves may be obtained from various parts of the body. The leads or derivations that have come into general use are

*Read before the Huron District Medical Society, Huron, South Dakota, February 12, 1931.

those adopted by Einthoven: the right arm and the left arm, lead I, the right arm and left leg, lead II, and the left arm and left leg, lead III. The current that produces the electrocardiographic curves obtained from lead I is derived mainly from the base of the heart. The current from lead II is supposed to correspond to the long axis of the heart, and that from lead III mainly from the side of the heart.¹⁰

The electrocardiogram in a clinical case consists of two main parts, an auricular complex and a ventricular complex. These complexes are made up of a series of deflections or waves; these waves have been arbitrarily called P, Q, R, S, and T. The waves extending above the horizontal base line are known as positive or upright waves and those below the base line are known as negative or inverted waves. The normal electrocardiogram shows three positive waves, P, R, and T, and two negative waves, Q, and S. There is some difference of opinion regarding the origin and significance of these waves, but authorities have practically agreed that they are due to waves of excitation and waves of contraction.

Most observers agree that the P wave is due to conduction of the excitation waves through the auricles and to actual contraction of the auricles. The QRS and T waves occur during systole of the ventricles. There is much difference of opinion regarding the exact cause and significance of these waves. The most plausible hypothesis is that the QRS wave represents the spread of the excitation wave through the ventricular Purkinje system, and is a combination of the effects of the two ventricles. Some observers have explained the T wave on the basis of an actual contraction of the ventricles. East and Bain proposed the hypothesis that it is associated with the changes that take place in the ventricles during the phase of recovery from activity. Eyster and Meek were of the opinion that it represented changes in contraction preponderance on one side of the line of equipotential.

The impression is prevalent in some localities that a diagnosis can be made from an electrocardiogram alone. Such diagnosis may be possible in some cases of acute myocardial infarction. It is not possible to take an electrocardiographic tracing of a patient and by this test alone to make a positive diagnosis of mitral stenosis, aortic insufficiency, and so forth.

The electrocardiogram affords valuable aid in cases of cardiac arrhythmia, or disturbance of impulse conduction.

SINUS ARHYTHMIA

Sinus arrhythmia is probably the simplest and most common form of cardiac arrhythmia. This

is also known as respiratory arrhythmia and as a type of irregularity occurring in youth. It is due to increased and decreased activity of the vagus. The heart beats slower during expiration and increases during inspiration. A mild degree of this type of irregularity is common. It is usually pronounced in persons whose nervous mechanism is unstable. This irregularity in itself is not indicative of organic disease. The characteristic features of an electrocardiogram in this type of arrhythmia are: the normal complexes and variation in the length of the cycles.¹⁰

PREMATURE CONTRACTIONS

Premature contraction, or extra-systole, is another common type of irregularity, and like sinus arrhythmia is not indicative of organic disease of the heart. This type of irregularity often causes the patient considerable annoyance, and frequently forms a basis for cardiac neurosis.

Premature contractions result from stimulation, arising from some points outside of the sino-auricular node. A premature beat may originate in any part of the auricles, ventricles or auriculo-ventricular conducting system. Premature contractions are the result of increased cardiac irritability, and are not themselves indicative of organic disease. They occur both in normal and diseased hearts. Pardee, in a series of fifty cases, found 84 per cent with cardiac disease, 10 per cent with active disease elsewhere in the body, and 6 per cent without any disease. Lewis found the percentage of premature contractions in normal persons to be slightly higher.

There are three types of premature contractions, the auricular, the nodal and the ventricular. In the auricular premature contractions the P wave occurs prematurely, often differs in form from the others, and is followed by a normal QRS complex. In nodal premature contractions the impulse may arise either in the node or in the bundle. The tracing may show a diminished P-R interval, the P and R waves may occur together, or there may be an R-P interval.

The characteristic features of ventricular premature contractions are that the QRS complex is often high in amplitude and shows notching or slurring on either limb, or at the peak, and the T wave often is exaggerated and peaked, and is always directed opposite to the QRS excursion.^{7 9}

AURICULAR FIBRILLATION

Auricular fibrillation represents one of the most common of the important types of cardiac arrhythmia. Such fibrillation is known also by the terms irregular, irregularity, and total irregularity. This type of cardiac arrhythmia may occur as acute, intermittent or paroxysmal, and chronic forms. In auricular fibrillation the auricles no

longer contract. The walls are dilated in diastole and are undergoing rapid fibrillatory twitchings. The distinctive features of the electrocardiogram in cases of auricular fibrillation are that in no two portions of the tracing are the cycles of the same length, the absence of the P wave and frequently small irregular wavelets.⁹

VENTRICULAR FIBRILLATION

Ventricular fibrillation is rarely recognized clinically as it is incompatible with life.

AURICULAR FLUTTER

In auricular flutter there is acceleration of the auricle to a rate beyond 200 a minute. This is usually accompanied by partial heart block. Contraction of the auricles may take place two, three, four or more times to contraction of the ventricle once. This partial block is apparently due to the inability of the auriculo-ventricular bundle to conduct the impulse to the ventricles. Auricular flutter usually comes on suddenly and may continue for weeks or even months. In most cases it is impossible to diagnose this condition without the aid of an electrocardiogram.

The presence of an auricular flutter is evidence of increased irritability in the auricular wall, and this is often associated with organic cardiac disease. The typical features of this tracing are a continued up-and-down wavy movement of the base line at a rate of more than 200 a minute, and inversion of the P wave.^{7 10}

HEART BLOCK

Heart block may be partial or complete. If partial, the ratio of contraction between auricles and ventricles may be 2:1, 3:1 or greater, or there may be merely a prolongation of the P-R interval. In complete heart block there is a complete dissociation between the auricles and ventricles, and this is practically always due to disease at the junctional tissue. The most common causes of complete auriculo-ventricular dissociation are degenerative cardiac disease (arteriosclerosis), myocarditis, syphilis (gumma of bundle), and malignancy. The characteristic features of this tracing are the slow ventricular rate, usually about 28 to 30 a minute, and the usually rapid auricular rate. The QRS complex is often bizarre, and there is absolutely no relationship between the rate of contraction of the auricles and ventricles. Stokes-Adams' syndrome is often associated with complete auriculo-ventricular dissociation. Mackenzie pointed out that ventricular standstill of ten seconds usually produces unconsciousness, and ventricular standstill of twenty seconds a generalized convulsion.

Interventricular block may be complete or incomplete. Bundle-branch block in most cases is due to arteriosclerotic changes. In incomplete

bundle-branch block, the QRS interval (the base of the R wave) is more than twelve hundredths of a second. In complete bundle-branch block, the base of the R wave is more than fourteen hundredths of a second and the QRS complex usually has a high amplitude and the T wave is in the opposite direction.⁹

T WAVE NEGATIVITY

Much has been written on the cause and significance of T wave negativity, but I wish to point out that predominant left ventricular strain will produce negative T wave in leads I or II, and predominant right ventricular strain will produce negative T wave in leads II and III.¹

Hypertension is a common cause of inversion of the T wave in leads I and in leads I and II. Infarction also is significant in the production of T wave negativity. Acute pericarditis, myxedema, digitalis, and the acidosis of diabetes are factors that will produce significant negative T waves. Occasionally negative T waves in all three leads are observed; there is as yet no satisfactory explanation for this.

Herrick, in 1919, predicted that in time it would be possible to localize lesions in the coronary system with an accuracy comparable to that with which obstructive lesions are located in the cerebral arteries. Barnes and Whitten have shown that it is now possible to localize accurately acute myocardial infarction by means of the electrocardiographic tracings following acute coronary occlusion.

The electrocardiograph, in comparison with any other laboratory facility, affords evidence as definite and accurate as any known in medicine. However, it is just as important now as it was before the advent of the electrocardiograph to obtain a complete clinical history, to make thorough general and Roentgen ray examinations, and to utilize other laboratory tests, if we desire to obtain the maximal information concerning a patient that has cardiac disease.

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THE PEANUT AS A BRONCHIAL FOREIGN BODY— ARACHIDIC BRONCHITIS

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The increasing frequency of opaque and non-opaque foreign bodies in the bronchi in recent years warrants thought and comment on the proper method of diagnosis and treatment. In the case of opaque foreign bodies, the Roentgen ray offers a reliable means of diagnosis but where the foreign body is nonopaque the problem is much more difficult. The greater number of these cases are of course among children, and searching questioning of the parents must be carried out, as often the clinical symptoms may minimize the suggestion that a foreign body is present. Of course, if symptoms of bronchial obstruction with diminished breath sounds and resonance are present, it is an easy matter to make a diagnosis. If the foreign body has been present for a prolonged period, obstructive emphysema may develop, and here the proper x-ray studies will be of great aid. Films taken at the end of inspiration and expiration will show the empty edematous lung and the diagnosis is aided.

From the difficulty of making a positive diagnosis in the case of nonopaque foreign bodies, one readily senses the necessity of specially trained colleagues, each contributing his special skill and all working together toward one end. Richards¹ observes that the internist, roentgenologist and bronchoscopist must coördinate and coöperate, that a complete and working equipment must be always at hand, and that a team of assistants thoroughly familiar with this work must be at all times available.

The nonopaque foreign bodies that may be aspirated are legion, but the most fatal one is the peanut. As early as 1914, Chevalier Jackson² said that peanut kernels were among the most fatal of foreign bodies, due to the peculiar irritating effect of the peanut upon the bronchial and tracheal mucosa. Later, in 1919, the same author says: "The most irritating of all substances we have encountered in the air passages are roasted peanut kernels." The symptoms resemble those of laryngeal diphtheria, cough, toxemia, pyrexia, dyspnea, and cyanosis. The term "Arachidic Bronchitis" was given to this condition due to chemical irritation caused by arachidic acid.

Arachidic acid is a naturally occurring, satur-

ated fatty acid having the formula $C_{20}H_{40}O_2$. This is one of the four solid fatty acids found in the alcoholic-ether extract of raw peanuts, and is present in five per cent strength in peanut oil. It is nonvolatile and insoluble in H_2O .

Dunlap³ cites the development of lung abscesses in cases in which the peanut is not removed, while Vinson⁴ cites a case of a boy aged two, who coughed out a peanut kernel one year after aspiration. Miller⁵ calls attention to a case in which it was necessary to do a tracheotomy forty-eight hours after bronchoscopic removal of a peanut, and the trachea cannula was worn ten days, with recovery. The proper evaluation of physical signs is emphasized by Baxter & MacDonald⁶ who report a case in which it was necessary to remove the peanut by means of the bronchoscope through a preliminary tracheotomy resulting in full recovery.

Heatly and Clausen⁷ find that the striking clinical feature of a peanut in the bronchus is the rapidity with which acute inflammatory changes are produced. The rapidity and degree of inflammatory reaction vary indirectly with the age of the child. The highest mortality is in children under two years. In six cases, three died in spite of successful bronchoscopic removal of the peanut. The necessity of prompt bronchoscopic removal cannot be emphasized too highly.

The pathological picture is that of intense hyperemia and rapidly developing edema. A little later, thick pus is formed and the whole bronchial tree is involved. The purulent secretion rapidly becomes tenacious and it is impossible for the child to cough it out. At autopsy the lung shows areas of atelectasis and emphysema. There is a purulent exudate filling the entire bronchial tree. This is present in both lungs. Microscopically the tracheal and bronchial mucosæ are desquamated. The submucosa is edematous. Blood vessels are engorged. The alveolar septums are edematous and show a round cell infiltration.

These two authors produced typical arachidic bronchitis in the rabbit, and concluded that the bronchitis is due to irritation and that infection plays a secondary rôle. The irritant is an acid present in the oleic and linolic fraction, and absent

in the solid fraction of the fatty acid of the peanut.

They found that the extract of raw peanuts, in addition to the four solid fatty acids, contains two known unsaturated fatty acids, oleic and linolic acids (oleic acid $C_{18}H_{34}O_2$; linolic acid $C_{18}H_{32}O_2$). They decided from their determination of the iodine number on this unsaturated fraction, that there was an even more highly unsaturated acid in this group. They concluded that the real chemical bronchial irritant was one of these higher unsaturated fatty acids. This conclusion would seem to displace Jackson's conclusion that the irritant existed in the arachidic acid of the solid fatty acid group.

Evidently, the form in which the peanut is aspirated has some bearing on the seriousness of the case, for Gittins⁸ reports a case in which a child of 22 months aspirated a piece of "cracker-jack" and it was removed sixty-three days later. This child had been through three attacks of so-called pneumonia, and several physicians had seen the case without advising bronchoscopic examination.

The treatment of these cases is always immediate bronchoscopic removal either with or without a tracheotomy. It should be done without a general anesthetic. Jackson⁹ notes the danger of giving a general anesthetic due to the dyspnea and the dependency of the patient on his voluntary muscles for aiding his fight for air. Neither should an opiate be administered. The cough reflex should not be allayed, as the patient depends on the tracheal and bronchial reflexes to expel the secretion. The application of a local anesthetic takes more time and causes the child more distress than the prompt introduction of the bronchoscope and the removal of the foreign body. Bronchoscopy properly executed by a trained hand, eye, and corps of assistants, is not a painful procedure. One has but to witness a bronchoscopic operation to realize the truth of the above statement.

In the past year, the author has performed thirty-seven bronchoscopic operations for foreign bodies, diagnosis, and treatment, and in only six cases was a general anesthetic used. In no case where a foreign body was known to be present or even suspected was any anesthetic used.

REPORT OF CASE

Case No. 15162. J. L., Boy, 6 years, while eating salted peanuts, twenty-four hours before admission, inhaled a peanut kernel. There was a spasmodic cough which persisted at the time patient was first seen by me. There were paroxysmal attacks of dyspnea and cyanosis. There was a persistent characteristic "asthmatoïd wheeze," a sign Jackson lays great stress upon. Rectal temperature $104.2^{\circ}F$. Pulse 140. Respiration

38. There were no physical signs other than bubbling râles. These were more noticeable on the right side of the chest. They could be heard on both sides, but were more pronounced on the right.

A diagnosis of foreign body in the right side of the chest was made from the history, the liquid râles, the "asthmatoïd wheeze," the attacks of dyspnea and cyanosis and the toxemia. The roentgenological examination did not help us in this case.

Immediate bronchoscopy was made without any anesthesia. The larynx was viewed through a Jackson laryngoscope and the mucosa appeared red and swollen. A 6 mm Jackson bronchoscope was next passed through the laryngoscope, and the tracheal and bronchial mucosa showed a diffuse redness and edema. There was much moisture in the bronchus of the right side and some was flowing over the carina into the left side. This liquid was removed by the suction machine and was found to contain a large amount of fairly thick yellow pus. After suction it was possible to see a peanut kernel lodged in the right lower bronchus, and it was removed with a Jackson right angular, probe pointed hook. The hook was passed beyond the peanut, then the bronchoscope pushed down and the peanut was held tightly between the hook and the mouth of the tube and the three removed together. This peanut was soft, and had an attempt been made to remove it with grasping forceps it would have crumbled. Immediately the boy's breathing became more quiet and his color better. He was at once removed to his room, and within a few minutes fell into a sound sleep.

His temperature and respiration however, remained high, and ten hours after the removal of the peanut it became necessary to do an emergency tracheotomy because of the cyanosis and dyspnea. At this time, a large amount of thick secretion was removed by the suction machine and bronchoscopic examination revealed an edematous hyperemic bronchial mucosa of both bronchi through which it was impossible to pass the bronchoscope.

The patient became steadily worse and died thirty hours after removal of the peanut. He died a typical asphyxiation death. Autopsy was refused.

SUMMARY

1. The aspiration of foreign bodies into the trachea and bronchi is increasing in frequency in children.
2. The most dangerous foreign body in a bronchus is a peanut kernel.
3. The irritant to the bronchial mucosa seems to be a highly unsaturated fatty acid present in the peanut kernel.
4. The diagnosis is frequently difficult and requires an internist, roentgenologist, and bronchoscopist working together.
5. The treatment is always immediate bronchoscopic removal either with or without a tracheotomy.
6. A general anesthetic should not be given.
7. An opiate should not be given.
8. A trained corps of assistants and a complete working equipment should be at all times available.

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THE SUCTION TECHNIC FOR TONSILLECTOMY

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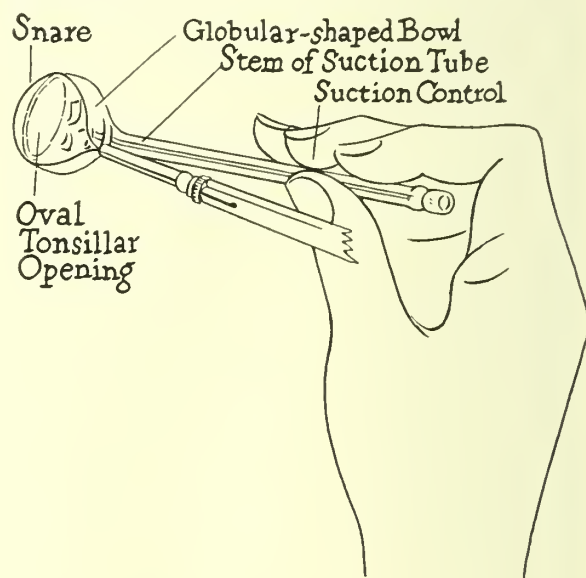
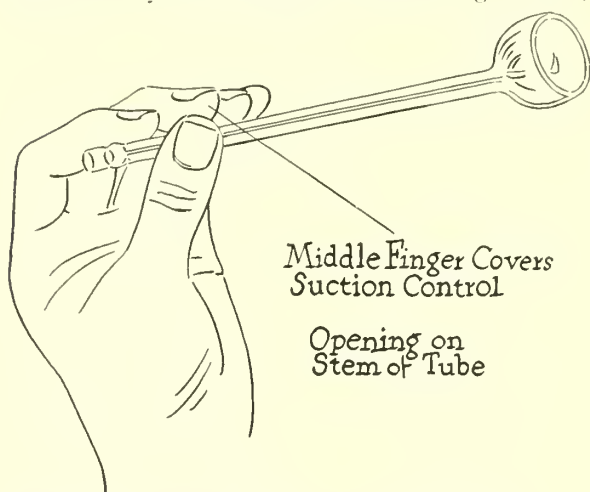
Next to ligation of the umbilical cord and with the probable exception of circumcision, no other operation is so frequently performed as tonsillectomy. This may be accomplished with entire satisfaction, but occasionally there is complaint from the patient. Especially is dissatisfaction noticed if after a difficult or messy dissection, a recurrence of the lymphatic growth occurs in the tonsillar fossa. Strangely enough, it is usually after a difficult operation that a recurrence presents.

The original operation of "tonsillotomy" was rightly promptly passed into the discard. The effort to remove the entire palatine tonsil has developed essentially two methods of which the more popular dissection has predominated for a number of years. Sluder's method of guillotine,

plished by the snare in such a clean manner that recurrences following the suction method are much less common than those following any other technic as yet developed for tonsillectomy.

The disadvantages are relatively few. If one is not careful, a portion of the uvula, tongue or pillar may be removed with the tonsil. Also the tonsil may be incompletely removed if the bowl of the tube is not large enough, but these accidents are not limited to the suction technic. The selection of tubes not properly blown is an easy error to make since many varieties are manufactured and marketed, but only a few are correctly patterned.

The bowl should have a slightly globular shape, so that the snare will be certain to slide toward the throat and not toward the shank of the tube.



Correct Manner of Holding Tonsil Suction Tube

except in expert hands, has met with only partial success.

The suction technic of tonsillectomy has been the outgrowth of this guillotine operation. Its advantages are many. The time of operation is minimal. The most rapid dissection cannot approach the speed of the suction tonsillectomy. It is relatively bloodless which is a decided advantage. It is easy for the patient. With any knowledge of the anatomy of the throat and care in handling, damage to surrounding structures is unlikely. Further, the entire separation of the extruded tonsil from the palatine fossa is accom-

The opening controlling the suction should be on the side of the stem opposite to the bowl and within comfortable reach of the fingers when the tube is placed in the throat. The tonsillar opening is oval in outline, placed in such a manner that its long axis is at a right angle to the stem of the tube. These tubes are made in four sizes, and the size is selected for the individual case. The next to the largest size is most commonly used, less frequently the largest or the next to the smallest. I have not found occasion for applying the smallest size.

(Concluded on Page 328)

SPINAL ANESTHESIA

BY G. SHERYL CABOT, M.D.

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The possibility of securing analgesia by the introduction of a drug about the spinal cord was first conceived in 1885 by Corning, who accidentally injected cocaine subdurally. It was not until 1899 that Bier attempted to place the discovery on a practical basis. However, fatalities at this time due to the toxicity of the drug along with other factors with which these early adherents were unfamiliar led to its abandonment; and it was not until more recent years, corresponding with the discovery of novocaine, that spinal anesthesia again claimed universal attention.

Labat, Babcock, Pitkin and others have used novocaine extensively and successfully, their success being dependent on their scrupulous attention to technique and the application of certain physiological procedures. They have reported collectively over 100,000 cases without a single fatality attributable to the anesthesia, their statistics including operations on all parts of the body and upon patients in all conditions.

Since this type of anesthesia is becoming more widely used, various theories are being advanced relative to its physics, chemistry, application and safety. As safety is of paramount importance to the progress of any endeavor, the greatest attention has been applied in this direction. Statistics recently compiled demonstrate that to date subarachnoid block has a lower mortality rate than all other anesthetics with the exception of ethylene, but additional numbers may even alter this relation.

Koster has shown experimentally and clinically that reasonable doses of novocaine introduced into the lumbar region are of such dilution on reaching the medulla, that the effect upon motor centers and fibres is negligible. He has also shown that sensory nerves are more susceptible to the influence of this drug than are motor fibres; in fact, motor paralysis may be incomplete at the site of injection.

Perhaps the greatest single contribution to safety has been the adoption of the Trendelenburg position which allows the return of blood to the heart and brain by gravity when splanchnic dilatation takes place, thus overcoming cerebral anemia which heretofore has been the greatest fear when spinal anesthesia was used.

This and the low toxicity of novocaine are well

demonstrated by an experiment in which enormous doses were injected subdurally in a dog without causing death. To combat a possibility of novocaine idiosyncrasy, barbituric acid derivatives are used preoperatively, which together with their sedative action serves a two-fold purpose. The use of vasoconstrictor drugs has fallen somewhat into discard. Since their action is through stimulation of nerves already paralyzed, it is difficult to imagine their effectiveness.

Relative to the control of subarachnoid block several methods have been brought forth.

First. The posture control, which depends on solutions of novocaine of lighter specific gravity than spinal fluid, the drug acting as the bubble of a spirit level, its ascension varying with the longitudinal tilt of the vertebral column.

Second. The pressure control. As the rate of diffusion is dependent on the pressure, this method attempts to increase the spinal fluid pressure by injecting the novocaine in solution.

Third. Volume control. By this procedure variable levels can be reached by varying the amount of spinal fluid used to dissolve the crystalline drug before reinjecting.

Fourth. Volume and site control. By choosing various levels for the injection and combining one or more of the above methods this procedure has won many advocates.

The success of application of spinal anesthesia depends largely upon two conditions, namely, the technique and the patient. Patients considered not suitable for local anesthesia either because of mental unbalance or children below the age of adolescence, comprise perhaps the greatest number in which spinal anesthesia should not be attempted. Infectious processes such as infection at the site of puncture, or septicemia with positive blood cultures, and organic diseases of the central nervous system are also definite contraindications. Hypotension is perhaps a marginal condition. The advantages in most instances are so in excess of any disadvantages as to make the latter almost negligible.

Since the early part of 1930, we have applied spinal anesthesia to over 250 cases, excepting those in which spinocaine was used, and our experience has been such as to make us grateful for its use. We have had no fatalities from subdural block or even instances in which there was

concern over the patient's condition. These cases include a variety of surgical procedures mainly below the diaphragm, in patients whose ages range between eight and eighty years. We have experienced a few failures when the anesthesia was not compatible with the surgery attempted, but in every instance it has been our conclusion that these were due to some infraction on our part, due either to faulty technique or insufficient doses. In the last 40 patients, we have administered 0.5 cc. of obstetrical pituitrin 45 minutes preopera-

tively, and have found that nausea during operation has been considerably lessened. These few cases, of course, are inadequate in proving the merit of giving preoperative pituitrin; its further use will determine its justification.

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This is the sixth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

By LEO G. RIGLER, M. D.

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DISEASES OF THE SPINE

A. General Considerations:

The spine, because of its special structure gives different manifestations of disease than the other bones. The bodies of the vertebrae are chiefly affected in most cases.

B. Anomalies and Deformities

1. *Spina bifida*. This may present a complete absence of the lamina with frequently a meningocele giving a dense round shadow behind it, or merely a small defect in the lamina, the two lateral portions not being joined to the spinous process. The latter is a frequent finding in the fifth lumbar and first sacral vertebrae.

2. *Sacroization* of the transverse process of the fifth lumbar vertebra is very common. Either one or both transverse processes will appear very large and fused to the upper margin of the sacrum or forming a false joint with the sacrum. Lumbarization of the first sacral vertebra may occur. This is a separation of this body from the remainder of the sacrum.

3. *Absence of spinous processes*. This may occur in one or more vertebrae and manifests itself as a defect in the posterior portion of the lamina.

4. *Fusion of two bodies*. A rare anomaly.

5. *A groove in the body of the vertebra* especially in young individuals giving the appearance of a fracture line but smoother and without deformity. This is due to the passage of an artery and vein through the vertebra.

6. *Rudimentary ribs* on the first lumbar fre-

quently separated from the transverse processes.

7. *Six lumbar vertebrae*.

8. *Scoliosis* giving a gentle side to side curve, kyphosis and lordosis.

9. *A wedge-shaped vertebra*, either as an extra (intercalated) vertebra or a deformity of one of the normal vertebrae. This may stimulate tuberculosis.

10. *Apophysis* of the transverse processes of the first lumbar vertebra, a small fragment of bone representing either an ununited epiphysis or a rudimentary rib. This remains separate from the transverse process.

C. Traumatic Conditions

1. *Dislocations*. Most common in the cervical region and can be seen on lateral view, the body of one vertebra being out of alignment with the other.

Dislocation between the atlas and axis, often associated with fracture of the odontoid process, is best seen in the antero-posterior films taken through the open mouth.

2. *Fracture of the bodies* of the vertebrae.

a. Simple. A line of decreased density in the body.

b. Compression. In addition to the fracture line there is a crushing of the body with a tendency toward a wedge-shape, the anterior portion of the body being narrowed. A fragment may be displaced anteriorly. There is frequently lateral, sharp angulation.

c. With dislocation. The body or a por-

tion of it may be displaced posteriorly out of alignment with the other vertebrae.

d. Healing. Callus is not produced to any extent with fractures of the body and repair is evidenced by increased density and loss of the fracture line.

e. Kummell's disease. Following trauma without an obvious fracture, a wedge-shaped vertebra may develop, the narrow portion being anterior. No fragments or dislocations are apparent.

3. *Other fractures.*

a. Fractures of the laminae and spinous processes occur. These produce marked angulations of the spine and considerable callus on healing.

b. Fractures of the transverse processes of the lumbar vertebrae especially the fourth and fifth show simply a line of decreased density.

c. Fractures of the transverse process of the first lumbar rarely occur alone. The apophysis should not be mistaken for a fracture.

4. *Value of X-ray examination.* Every case of back injury, no matter how slight, should have an adequate X-ray examination. Entirely unsuspected fractures are frequently discovered in this way. The roentgen examination is the best method of diagnosis and also gives important data as to the character, extent, and seriousness of the injury, and the effects of treatment.

D. *Infectious Diseases*

1. *Osteomyelitis.* This is very rare and gives much the same findings as elsewhere in the body.

2. *Tuberculosis.* This gives the following findings:

a. An area of rarefaction within the body of the vertebra usually near the articular surfaces.

b. Narrowing or obliteration of the intervertebral disc.

c. Involvement of the neighboring vertebra with eventually fusion of the bodies of the two vertebrae involved and the formation of a wedge-shaped mass. Other than the very rare cases of congenital anomaly, fusion of the bodies of two vertebrae occurs only with tuberculosis.

d. "Knuckle" formation or extreme, rather acute kyphosis. The angulation is posterior rather than lateral.

e. Paravertebral abscess giving a fusiform shaped shadow about the bodies of the

vertebrae especially well shown in the dorsal region. This may be the first sign of tuberculosis of the spine, preceding the visible change in the bones.

3. *Infectious arthritis.* This is rare and shows a roughening of the articular surfaces and narrowing of the transverse articulations as well as the intervertebral region. Frequently a large amount of new bone formation is present in these areas.

4. *Chronic hypertrophic arthritis.* Irregular bone spurs are present projecting from the edges of the anterior and lateral surfaces of the vertebrae. The intervertebral spaces are intact and there is no change in the articular processes. New bone formation sometimes going on to bony ankylosis is the only finding.

5. "*Marie-Strumpell*" *arthritis.* (Ankylosing Spondylitis.) The bodies of the vertebrae are square-shaped and there develops a uniform jacket of new bone surrounding them and fusing one vertebra to another. The intervertebral discs and articular processes are normal but the laminae, transverse articulations, and even the spinous processes may be involved in the new bone formation.

6. *Typhoid osteitis.* This produces small areas of destruction near the margins of the bodies of the vertebrae and these appear as small irregular areas of decreased density surrounded by a capsule of increased density.

7. *Osteoporosis and caries vertebralis.* A marked rarefaction of the whole spine, especially the lumbar, with marked narrowing of the bodies of some of the vertebrae and concavity of the superior and inferior intervertebral surfaces producing a "cupping" is characteristic. This usually occurs with old age or accompanying a chronic arthritis.

8. *Vertebral epiphysitis or osteochondritis.* This is a change occurring during growth, similar to osteochondritis of the hip, tibial tuberosity, etc. The articular surfaces of the bodies of the vertebrae appear roughened, irregular and rarefied. The change is in the epiphyseal line. The body may later become narrow and anteriorly compressed. "Juvenile kyphosis" may be an end result.

9. *Summary.* The differential diagnosis of diseases of the spine depends largely upon the roentgen examination. It gives the earliest and most accurate means of diagnosis as to spinal tuberculosis, especially, and is of considerable value in other conditions.

E. *Tumors of the Spine*

1. *Primary tumors* of the spine itself.

- a. Osteogenic sarcoma is the most common and produces a very marked destruction with marked proliferation of new bone, extreme disorganization, with frequently marked crushing of the body and fragmentation.
 - b. Myeloma may manifest itself in the spine as in the other bones.
 - c. Ewing's sarcoma may also occur in the spine.
2. *Metastatic tumors* of the spine.
- a. Osteoclastic carcinoma produces an extreme rarefaction of the body of the vertebra. Compression fracture superimposed upon this is common.
 - b. Osteoblastic carcinoma. Previously described under tumors.
 - c. Hypernephroma and other tumors give the findings described under bone

tumors.

3. *Tumors of the spinal cord.* If they become large enough a fusiform appearance of the spinal canal can be seen. The posterior margins of the bodies of the vertebrae show erosion and concavity. Atrophy of the bodies takes place and finally compression fractures.

F. *Iodized Oil Injections into Spinal Canal*

Either a heavy lipiodol is injected into the cisterna magna and this passes downward until it meets a tumor or other obstruction, or a lighter lipiodol is injected into the lower lumbar portion of the spinal canal and rises until it meets the obstruction. The substance gives a very dense shadow on X-ray examination and can thus outline a tumor of the spinal cord or localize a fibrosis to the exact region where it has occurred. It is a valuable procedure in attempting to determine exactly where laminectomy should be done.

This is the third of a series of four articles covering the field of Immunization by Dr. H. D. Lees, Assistant Professor of Preventive Medicine and Public Health, and Assistant Director of Student Health at the University of Minnesota. The concluding articles will appear in the fifteenth of the month issues until the series is completed.

SMALLPOX*

By H. D. LEES, M.D.

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Approximately fifty thousand cases of smallpox are reported in the United States each year. The disease stands out as the great challenger of public health efficiency and progress. Prevention of this scourge by vaccination is at once the easiest and most reliable measure that has ever been placed at the disposal of mankind. Yet our most highly civilized nations, with the possible exception of Germany, present annually smallpox records which are a reproach to an enlightened people.

Few communities in this country wage a continuous and successful campaign for the prevention of the disease. Providence, R. I., furnishes us with the proof that the disease can be readily controlled, by its record of one school child having had smallpox during the past fifty years. It may be that our enthusiasm has waned because of our pride in what we have already accomplished.

Smallpox, as we know it today, is truly an insignificant menace when compared with the disease which Jenner knew and worked with. It has been estimated that sixty million people died of smallpox during the eighteenth century. Smallpox had no peer as a destroyer of human life in pre-

vaccination days. Practically ninety per cent of all persons contracted the disease and about one-fifth of all cases were fatal. Macaulay, the English historian, wrote in the early part of the nineteenth century regarding the death of Queen Mary from smallpox in 1694: "That disease, over which science has achieved a succession of glorious and beneficent victories, was then the most terrible of all the ministers of death. The havoc of the plague had been far more rapid; but plague had visited our shores only once or twice within living memory; and the smallpox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power." It is not difficult to understand the extreme prevalence of smallpox in these early times when we consider the highly communicable nature of the disease and the total lack of immunity of all persons not previously afflicted. Natural immunity to smallpox has been authentically recorded in very rare instances.

Smallpox was introduced into America by the Spaniards early in the sixteenth century. Within a comparatively short time, according to Chapman, three and one half million persons died of

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the disease in Mexico. One half of all American Indians had perished from smallpox previous to 1841. In Iceland, in a single year, 1707, eighteen thousand out of a total population of fifty thousand died of the disease. The mild type of the disease which is now so prevalent in this country, was not encountered during these periods of early destruction. Probably the worst epidemic of more recent times was that which occurred in Montreal, in 1885, which is reported by Osler. Smallpox had been prevalent in Montreal from 1870 to 1875 and had then died out. During the next ten years the city was free from the disease and vaccination was much neglected. In February, 1885, smallpox was introduced into Montreal by a Pullman car conductor from Chicago, and in the following nine months, 3,164 persons died of the disease. The experience of Montreal has been duplicated by many American cities in recent years, the only difference being that the total deaths have not reached so high a pinnacle. Such unfortunate recurrences are bound to continue as long as we regard smallpox as a mild disease of no consequence. The malignant type of the disease will sooner or later make its appearance in any community where there is a steadily increasing accumulation of susceptible persons. Early vaccination of infants and repeated revaccination of all persons is a simple and efficient preventive.

TYPES OF SMALLPOX

The clinical types of variola may be classified as follows:

1. Variola vera; (a) discrete (b) confluent.
2. Variola hemorrhagica; (a) purpura variolosa, or black smallpox; (b) variola hemorrhagica pustulosa, or hemorrhagic pustular form.
3. Varioloid; smallpox modified by vaccination.

Diagnosis of smallpox is usually not difficult except in the purpuric form, where death not infrequently occurs before the development of the characteristic skin lesions. In the majority of cases of the disease as we see it today, the initial symptoms develop usually about the twelfth day after exposure. The incubation period of the more malignant types, however, may be as short as eight days or slightly less. Fever, malaise, headache, and backache are the most constant symptoms during the invasive period, and the rash makes its appearance usually on the fourth day of illness. Chickenpox may sometimes be confused with mild smallpox. Probably the most important point in differential diagnosis between the two conditions is the period of distinct prodromal symptoms of three or four days duration in smallpox, whereas in chickenpox there is usu-

ally nothing more than a slight malaise of short duration preceding the appearance of the rash. The skin lesions of smallpox invade the extremities, face, and scalp as frequently as they do the trunk, whereas in chickenpox there is usually a decided thinning out of the lesions on the extremities. The early papular lesion of smallpox shows a distinct induration at its base, producing a "shotty" feeling in the skin; the lesion in chickenpox shows no such induration.

In addition to the mild form of the disease, varioloid, which is encountered in persons possessing a partial immunity as a result of previous successful vaccination, there is definite evidence that a new strain of the disease, extremely mild in character, was introduced into this country in 1896. Chapin¹ has investigated very thoroughly the appearance and spread of this mild form of smallpox in America, and has traced its spread from our shores to those of foreign countries. The disease first appeared in and about Pensacola, Florida, in 1896. Forty ships had called at this port from Africa during that year, and it is known that a mild strain of smallpox had been prevalent in South Africa for many years preceding this time. By 1900, this mild form of the disease had become widespread over this continent, and our Northwest states have practically never been rid of the disease since that time. There is definite record in our State Department of Health that the disease was brought into Minnesota by a resident of the State who was exposed to a case in Nebraska. This aberrant type of the disease was designated by some as "Philippine itch" or "Cuban itch," and in some countries goes by the name Alastrim. Vaccination protects against them all, and they must be considered as true smallpox.

The influence of the mild strain of smallpox on the fatality rate of the disease in Minnesota is clearly indicated by comparing rates for the years preceding 1899 with those of subsequent years. From 1878 to 1894 there is a record of eight years in which smallpox deaths occurred. During these years 946 cases were reported with 210 deaths, a fatality of 22.0 per cent. From 1899, the year in which the mild form of the disease made its appearance, up to 1923, the fatality rate was 0.4 per cent. During this twenty-five year period there were 79,620 reported cases and 394 deaths. The number of cases of the mild type of smallpox reported during this period probably represents not more than ten per cent of the actual number of cases.

People throughout the Northwest, rather naturally, came to regard smallpox as a trifling dis-

case, and we have all heard the remark, "vaccination is worse than smallpox." In 1903, the compulsory vaccination law in Minnesota was repealed. People, generally, became careless about vaccination, as evidenced by the fact that of students entering the University of Minnesota prior to 1924, approximately fifty per cent had never been vaccinated. In the state at large, probably considerably less than fifty per cent of the residents were immune. This condition made possible Minnesota's disastrous experience with the disease during the years 1924 and 1925. In a period of twenty months, 504 smallpox deaths occurred out of a total of 4,041 cases. This is one of the worst epidemics the country has witnessed in many years. People were slow to vaccinate even though the number of deaths was steadily mounting. It took more than a year and a half to control this outbreak, during which time hundreds of thousands of vaccinations were applied. By the end of the year 1925 we had a highly immune population. What has been the effect of this widespread vaccination on smallpox in Minnesota since that time? From 1899 to 1923 there was not a single year in which there had not been reported one or more smallpox deaths. In the five years just preceding 1924, there had been reported in the state 22,376 cases of smallpox, an average of 4,475 cases a year. Fifty-nine deaths from smallpox occurred during this five year period. In the five years immediately following the close of the epidemic, there was a yearly average of but 218 cases, and no death from smallpox has occurred.

SMALLPOX VACCINATION

The first experiments with the virus of cowpox, or vaccinia, as a means of immunization against smallpox, were carried out by Edward Jenner, in England, in 1796. Previous to this time inoculation with the infectious material from the lesions of smallpox had been a rather common practice. The first vaccinations in America were done in 1800. Since vaccination was practiced for many years before the era of asepsis and antisepsis, it is only natural that severe wound complications should at times be encountered. Improved methods of preparation of vaccine virus together with government control, which has been in effect since 1902, have made vaccination, when properly performed, a safe procedure. Much of the opposition to vaccination which now exists could be overcome if we avoided the unnecessarily severe reactions which have been all too common in the past. This may best be accomplished by vaccinating early in life, preferably at the age of three

to six months, when reactions to the primary "take" are minimal. The introduction of the virus over a small area by the multiple pressure method should be universally adopted. This method is vastly superior to the older method of scarification. In vaccinating by the multiple pressure method, the needle is held parallel to the skin surface and the point is pressed down rapidly and firmly through the drop of vaccine ten or twelve times so as to penetrate the epidermis. The remaining virus is immediately wiped off and no dressing is applied. The area in which the virus is introduced in this manner should not be over one eighth inch in diameter. This method, employed in vaccinating approximately twenty thousand students at the University of Minnesota during the past seven years, has been responsible for an almost complete disappearance of severe reactions following primary vaccinations.

Shields and dressings of various types are definitely contraindicated in the care of the vaccination site. Of 116 cases of postvaccinal tetanus investigated by the United States Public Health Service, it was found that all had developed following primary "takes," which had been covered for all or part of their active course by some type of dressing. The lesion produced by vaccination should, during its various stages, be kept dry and cool. Dressings serve to prevent proper ventilation of the vaccination wound, and to retain perspiration and moisture. The vesicle under these conditions becomes soft and readily breaks down, with a resultant exudation of serum or pus. The observations of Armstrong, of the United States Public Health Service, who has carried out numerous animal experiments with relation to tetanus and vaccination, lead him to the conclusion that "accumulation of broken down material retained by the dressing at the vaccination site, wherein tetanus organisms may become buried and thus find anaërobic conditions, is the essential condition without which postvaccinal tetanus will not develop." In the experience of the United States Public Health Service, which department investigates every case of postvaccinal tetanus, the condition has never been observed to develop in a person vaccinated by the multiple pressure method and where no dressing has been used. Bunion plasters and celluloid shields have been responsible for many vaccination accidents, and should never be used. Destruction of a large area of epidermis by scarification, with a resultant large vaccination wound and scar, should be avoided. Leake and Thomas² have shown that the immunity associated with a large scar developing

after vaccination is in no way superior to, or of longer duration than, that obtained from the small scar.

The duration of immunity conferred by a single smallpox vaccination varies within a rather wide range. In the vast majority of cases, however, complete protection is enjoyed for a period of from five to seven years. It is indeed a rare occurrence to see fatal smallpox in a person vaccinated as recently as seven years. In the Minnesota epidemic of 1924-25, 85.18 per cent of cases were in unvaccinated persons and only 1.78 per cent of cases were in persons vaccinated less than seven years previously. In 1925 Milwaukee had 86 smallpox deaths, and 82 of these were in persons never vaccinated, and 4 were in persons vaccinated from twenty to fifty years previously.

The prevention of smallpox depends upon vaccination. Sir William Osler's challenge to the antivaccinationist is worthy of consideration. "I will go into the next severe epidemic with ten selected vaccinated persons and ten unvaccinated persons. I should prefer to choose the latter—three members of parliament, three antivaccination doctors, if they could be found, and four antivaccination propagandists. And I will make the promise neither to jeer nor to jibe when they catch the disease, but to look after them as brothers, and for the four or five who are certain to die I will try to arrange the funerals with all the pomp and ceremony of an antivaccination demonstration."

POSTVACCINAL ENCEPHALITIS

For some years past, postvaccinal encephalitis has been a rather disturbing factor in the Netherlands and in England. The report of Sir George Buchanan³ to the Office International d'Hygiene Publique, sums up the prevalence of this condition in various countries during recent years. In his opinion, this complication is a characteristic clinical entity closely resembling the encephalitis that follows influenza and other acute infectious diseases. No direct causal relationship has ever been traced to the vaccine virus employed. Vaccine has been imported from other countries where encephalitis was not encountered, including a neurotropic vaccine from Spain, but this had no influence in reducing the incidence of encephalitis in the Netherlands. The disease develops most commonly at from nine to thirteen days after vaccination, that is, shortly after the vaccination reaction has reached its height. It would there-

fore appear that a latent virus, or ultravirus, responsible for the disease is in some way reactivated by the superimposed vaccinia infection. In 1928, Holland had 146 cases of postvaccinal encephalitis, which was about one case in every 5,000 vaccinations. In 1929, there occurred 52 cases of encephalitis among 77,354 primary vaccinations, and 31 cases of encephalitis among 1,196,465 secondary vaccinations. No case of encephalitis occurred in 16,000 primary vaccinations done in children under one year of age. Authorities in Holland have not noticed any definite or apparent relationship between the intensity of the local vaccination reaction and the development of encephalitis. The majority of cases occur in children aged five to fifteen years. The disease is much more prevalent in rural than in urban communities, and appears with greatest frequency in the month of March, while least frequent during November and December.

In England, during 1928 and 1929, there were 90 cases of postvaccinal encephalitis and 42 deaths. There was a very noticeable grouping of cases within certain districts. The youngest person attacked was a child of twenty months and the oldest was fifty-five years. All but one of the 48 nonfatal cases made a complete recovery. Other European countries have fared much better. In Italy and Belgium, where vaccination is most common in infants, no cases have been observed. In Greece, although the health authorities have been on the lookout for its occurrence, no case of encephalitis was reported during 1928-29, although 800,000 vaccinations were performed. Germany had 50 cases with 15 deaths in three years. During 1929 the Netherlands report one case of encephalitis for each 4,000 first vaccinations; England, one case for each 48,000 first vaccinations; and Germany, one case for each 750,000 first vaccinations. A small number of cases have appeared in the United States during recent years, and there is no doubt that an increased prevalence, comparable with that in the Netherlands, would seriously affect vaccination practice. It would appear from the evidence now available, that the prevention of postvaccinal encephalitis depends largely upon the routine vaccination of children under one year of age.

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CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the *Journal-Lancet* is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1952.

A woman of 25, admitted to hospital December 2, 1930, on the obstetrical service; para-I; gravida-II. Pregnancy estimated at about four and one-half months. July 27, 1930, was the last menstrual period. She stated that a physician gave her medicine to bring on the flow some time later but without success. October 5 she began to vomit after each meal; had hematemesis at times; frequent nosebleed. She went to a hospital and stayed two weeks at this time and was discharged free from symptoms. November 8 she began to complain of diplopia, and a slight deafness was noted. November 10, her husband noted that her face was slightly drawn to one side and that she was mentally depressed. November 23, he noted that she became forgetful and drowsy; slept a great deal during the day. November 27, she became hilarious, unusually talkative and restless; her conversation was described as silly at times; had nightmares and delusions. A physician was called who gave her a sedative. Her memory became progressively worse after this; remembered past events better than recent ones; was still able to recognize relatives and friends. November 28, incontinence of urine and feces. November 30 rather rapid enlargement of the lower portion of the abdomen was noted by her husband.

On admission, December 2, the outstanding findings were forgetfulness, incontinence of urine and feces, pregnancy, and enlargement of the lower abdomen. Her first labor, in 1926, was long and hard, but a normal living baby was delivered by forceps.

Physical examination: Fairly well developed and nourished white female, age 25, who appeared quite drowsy, but cooperated well when awakened. Her skin had a rather muddy appearance. Slight tenderness over the right maxillary sinus. Bilateral and vertical nystagmus. No exophthalmos; no lid lag; thyroid palpable but not enlarged. Pharynx injected; tonsils present. Chest clear. Heart rate 110; blood pressure 115/70; apex beat in the fourth to fifth interspaces just outside of the midclavicular line. Uterus extended three fingers below the umbilicus, globular in shape, quite firm; the cervix was soft and patulous; bilateral laceration.

Neurologic examination (consultation) showed bilateral and vertical nystagmus; fundi were negative. Cranial nerves were negative; visual field normal; both knee jerks and left ankle jerk, minus four; right ankle

jerk normal. Knees buckled under her on standing. No other signs of psychosis except confusion. Opinion: might be functional; if organic, probably frontal.

X-rays. Chest negative. Skull negative; no evidence of increased intracranial pressure.

Laboratory. 2,600 cc. urine per catheter: cloudy; 1,018; two to three white blood cells. Blood: hemoglobin 63 per cent; red cells 2,770,000; white cells 6,500; polymorphonuclears 82 per cent; lymphocytes 18 per cent. Spinal fluid: 130 mm. pressure on puncture; 240 mm. on jugular pressure; Wassermann negative; no cells; colloidal gold negative; Nonne and Noguchi negative. Temperature 99.2°; pulse 110.

December 3 talked incoherently. 900 cc. of urine obtained by catheter. Temperature 99°; pulse 110. December 4 to 11: daily catheterization; incontinent; talked incoherently; extremely drowsy at times. Temperature up to 99°. Pulse 100 to 104; respirations normal. Urine on December 5, 1,017; albumin 2+; 4 to 5 cells in a high power field. Basal metabolic rate +6 per cent. December 17, leucocytes 10,700; temperature 99.4°; pulse 86 to 120; incontinent; mental condition about the same. December 18, basal metabolic rate -6 per cent. December 21, stuporous; incontinent; mental condition worse; contractions of the fetus palpable; bladder full and projected below the symphysis into the vagina. December 22 blood urea nitrogen 100 mg.; urine full of pus cells. Blood: leucocytes 10,700; polymorphonuclears 76 per cent; lymphocytes 22 per cent. Therapeutic abortion recommended; Voorhees bag inserted. December 23, bladder irrigated with silver nitrate; pulse 80 to 148; temperature 99.4° to 101.8°; respirations normal. Hypodermoclysis 2,000 c.c. of 5 per cent glucose; intravenous 1,000 cc. No change in the cervix. December 24, cervix dilated; stillborn fetus delivered. About 200 cc. of blood lost. Patient remained stuporous. Death December 29.

Post-mortem report. Marked abdominal distension due to gaseous distension of the stomach and intestines. Heart weighs 200 grams; cloudy swelling of the muscle. Early hypostatic broncho-pneumonia. Liver, cloudy swelling but no hemorrhages or necrosis. Each kidney weighs 200 grams; smooth surfaces; very cloudy cortices; pelvis dilated and filled with purulent necrotic material; both ureters markedly dilated and similarly affected; bladder distended with purulent necrotic material; marked hemorrhage, necrosis, and ulceration of the mucosa of the bladder.

Diagnoses. 1. Acute purulent cystitis and pyelone-

phritis (death from uremia). 2. Subinvolution of the uterus but no definite endometritis.

Comment. Apparently the infection began as a cystitis which spread through the ureters to the kidneys. Death was due to uremia and toxemia. The enlarged pregnant uterus may have had some effect in causing a pressure on the ureters. The mental symptoms were presumably due to the toxemia of sepsis. This is not a true toxemia of pregnancy.

Autopsy—30—1657.

The case is that of a man 70 years old. First admission July 22, 1925, when he complained of painful and frequent urination and nocturia. He also had had spells of dyspnea on ordinary exertion for the previous three years. Gastrointestinal disturbances from time to time for about five years. Examination showed emphysematous chest. Blood pressure 120/78. Moderate enlargement of the prostate. Urinary symptoms were attributed to the prostatic hypertrophy.

Second admission, August 27, 1928. Complaint of precordial distress; said that he had had these symptoms for three or four years; described the distress as a choking sensation over the precordium followed by pain which spread through one or both shoulders and arms. Recently the attacks would be brought on by a walk of half a block, a full stomach, excitement or anger. Attacks would last one-half to three-quarters of an hour. They often came at night. Amyl nitrite gave relief. Examination showed a well nourished male; heart sounds distant but regular; no murmurs; no thrills; marked pulsation of the abdominal aorta; blood pressure 130/85. Hemoglobin 80 per cent; red cells 4,440,000; leucocytes 10,700. P. S. P. 52 per cent. Blood urea 19 mg.; sugar 150 mg. Prostatectomy on the day of admission, August 27. Microscopic examination of the prostate showed a simple adenomatous hypertrophy.

Third admission September 2, 1930. Cystoscopic examination and pelvic lavage performed. P. S. P. 68 per cent; urea nitrogen 26.1 mg.; sugar 123 mg. Patient was discharged a few days later.

Fourth admission, October 26, 1930, when he complained of abdominal pain and a palpable tumor in the region of the umbilicus. The tumor was somewhat irregular in shape with smooth surfaces, fixed against the spine; it pulsated forcefully against the palpating hand. The mass could be fairly well outlined. It pressed against the abdominal wall to the left of the midline. The patient thought that the tumor was increasing in size. Roentgen examination showed that the mass was extragastric and extraintestinal, but it caused pressure deformity of the stomach. A large renal calculus was observed in the right pelvis. Cystoscopic examination of the right kidney showed moderate hydronephrosis, with an impacted calculus at the ureteropelvic junction. A pancreatic cyst and aneurism of the abdominal aorta were considered.

Laboratory data. Urine: specific gravity 1.015 to 1.020; albumin trace; sugar 0; many pus cells. Blood: hemoglobin 70 per cent; red cells 3,830,000; white cells 11,200; 70 per cent polymorphonuclears; 24 per cent lymphocytes. Blood Wassermann and Kahn tests were negative. Cystoscopic urine showed a slight increase in leucocytes in both right kidney and bladder specimens. Gram negative bacilli grew on cultures of the urine from both kidneys.

November 13, 1930, patient experienced a sharp ab-

dominal pain from which he collapsed and became unconscious. Death about one hour after this acute attack.

Post-mortem report. No edema; no jaundice. Abdominal cavity contains about 500 cc. of fresh blood; large blood clots in various parts of the cavity. A large aneurism of the abdominal aorta is found which has ruptured into the mesentery and thence into the peritoneal cavity. There is moderate atherosclerosis of the thoracic aorta, and rather severe atherosclerosis of the abdominal aorta. The aneurism measures 12x10 cm. There is a large thrombus in the anterior portion. The aneurism is of the arteriosclerotic type, not the syphilitic type. The heart weighs 460 grams. There is marked coronary sclerosis with masses of dense fibrous tissue in the myocardium of the left ventricle. No valvular disease. Right hydronephrosis with nephrolithiasis. Chronic cystitis.

Diagnoses. 1. Arteriosclerotic aneurism of the abdominal aorta with rupture. 2. Coronary sclerosis.

Comment. This is a case of atherosclerosis which produces symptoms of two kinds. The early part of the history shows symptoms of coronary sclerosis, which was verified at necropsy. Sclerosis of the abdominal aorta advanced to such a point that an aneurism occurred and this ruptured. The rupture was the immediate cause of death. This is an arteriosclerotic aneurism. A positive Wassermann is not expected. Aneurisms of the abdominal aorta are usually not syphilitic but arteriosclerotic.

Autopsy—30—1684.

A white boy, three years of age, was admitted to hospital September 29, 1930. The chief findings were pallor, restlessness, loss of appetite, cervical adenopathy, and multiple ecchymoses due to slight traumas. The first abnormal sign noted by the parents was enlarged cervical lymph nodes, which were first seen on August 18, 1930. They also noted that slight injuries would cause large subcutaneous extravasations of blood. For example on August 18, a large hematoma developed below the eye from a slight injury; on September 15, a large hematoma developed on the elbow following a slight trauma. On September 15, the physician told the parents that the child had large inflamed tonsils. On September 26, the child first began to lose appetite and developed nausea and vomiting. The vomitus was blood streaked. There was no diarrhea. There is nothing of importance in the past history.

Examination showed a well developed male child, very pale. Respirations were labored. There was bleeding from the gums. The tonsils were very large. The cervical glands were palpable, the average being about the size of half an English walnut. The liver margin extended 1.5 cm. below the costal border on the right. The spleen was barely palpable. There was marked enlargement of the axillary and inguinal lymph nodes. The skin over the lymph nodes was not reddened or tender. The ecchymoses noted above were present.

The blood on September 29 showed red cells 1,120,000; hemoglobin 25 per cent; leucocytes 115,200; mature lymphocytes 70 per cent; immature lymphocytes 25 per cent; polymorphonuclears 2 per cent; myelocytes 3 per cent; marked hypochromasia and anisocytosis; moderate poikilocytosis. The urine was negative. October 2, the patient was transfused with 250 cc. of citrated blood. October 4, he seemed improved; was sitting up and playing with toys; hemoglobin 35 per

cent; red blood cells 1,000,000; leucocytes 21,000. October 8, bleeding time 2 minutes; clotting time 7 minutes 30 seconds. October 15, leucocytes 23,600; 97 per cent lymphocytes, both mature and immature; 3 per cent polymorphonuclears. October 17, hemoglobin was 73

Autopsy—30—1558

The case is that of a woman, 47 years old, who died during her fourth admission to hospital. Her first admittance was on February 16, 1929, when she stated that she had abdominal pain, accompanied by vomiting, after eating. It had not been present constantly at first, but, during the six months that she had noticed it, it had gradually become more frequent. Five gastric expressions were done and no free or combined hydrochloric acid was found on any occasion, even after histamine. The hemoglobin and red count were high. The leucocyte count was normal. There were numerous stool specimens examined, but in only two of them was occult blood found. X-rays showed a projection from the posterior wall of the cardiac portion of the stomach which retained a small portion of the barium meal. There was some depression of the margin of the stomach adjacent to the projection, and some irregularity was noted near the base of the lesion. X-ray opinion was penetrating peptic ulcer in the posterior wall of the cardia, but malignancy could not be ruled out. Three days later, after an interval of Sippy diet, x-ray showed marked reduction in the size of the niche, but the irregularity surrounding the lesion remained. Study seemed to indicate that the ulcer was probably benign. One month later still more healing of the ulcer was demonstrated by x-ray, but carcinoma could not be ruled out. The patient's symptoms responded very well to ulcer treatment, and she was discharged on April 10, 1929.

The second admittance was on September 23, 1929, when she complained of epigastric distress coming on one-half to one hour after meals. The distress was burning in character and relieved by soda, water, and food. There had been a loss of 22 lbs. in weight. There had been occasional nausea and vomiting. Daily stool examination showed occult blood, from a faint trace to ++++. The blood and spinal fluid Wassermann's were negative. X-ray studies of the colon were negative. X-ray findings at this time showed a lesion in the pyloric region through which gastric mo-

tility was lost. The suggested diagnosis were scirrhus carcinoma of the stomach, linitis plastica, and syphilis of the stomach. On October 22 a laparotomy was done and inoperable carcinoma of the stomach was found. The patient recovered rapidly from the operation and was discharged.

The third admittance was May 2, 1930, at which time there was severe pain in the lower abdomen of one day duration. There had been attacks of nausea and vomiting for about one month. She was examined by the gynecologic service. While pelvic examination suggested malignancy, the nature of the pains and history of gonorrheal infection made the diagnosis of pelvic inflammatory disease likely. Smears from the genitalia showed the presence of organisms morphologically identical with gonococci.

The fourth admittance was October 10, 1930. She stated that for three weeks she had had sharp abdominal pains with vomiting. The pains came and left every 5 to 10 minutes; they were sharp, severe, cramp-like, and localized in the region of the umbilicus. She had been unable to retain food for about one week. She was considerably underweight, but no special abnormalities were discovered on examination except some tenderness over the right kidney. She was treated with palliative measures. Her hemoglobin remained high and the leucocyte count was normal. Her temperature was normal. She died quite suddenly on the fifteenth day of admission, October 24, 1930.

Post-mortem report. Emaciated woman, weighing about 90 lbs. The peritoneal surfaces, especially over the intestines, are studded with small carcinomatous metastases. The heart weighs 200 grams and shows no disease except atrophy. There is no bronchopneumonia. A few small carcinomatous nodules in the liver. Old pelvic adhesions. Myoma of the uterus.

Diagnosis. Diffuse infiltrating scirrhus carcinoma of the stomach with extensive peritoneal metastases and a few metastases in the liver.

Comment. A diffuse infiltrating scirrhus carcinoma of the stomach often gives a long history, such as this case exhibits, since it frequently does not cause a high degree of pyloric stenosis. The tumor was probably diffuse at the time of the first x-ray examination, but the projecting mass in the cardia gave a suggestion that the tumor was located in this position.

THE SUCTION TECHNIC FOR TONSILLECTOMY

(Continued from Page 318)

With such a tube in its proper size, the snare is fashioned to slip over its tonsillar aperture and this opening placed accurately over the tonsil. By pressing the finger over the patency in the stem, the suction is contacted, drawing the tonsil into the bowl of the tube. Holding the

tonsil in this position for 15 to 20 seconds seems to act as a hemostat, probably by stasis of blood in the congested vessels. A steady, smooth constriction by the snare removes the tonsil cleanly without postoperative hemorrhage and with a minimum of discomfort to the patient either during or following the operation.

THE JOURNAL-LANCET

REPRESENTS THE MEDICAL PROFESSION OF

MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA and MONTANA

THE OFFICIAL JOURNAL OF THE

North Dakota State Medical Association

South Dakota State Medical Association

The Hennepin County Medical Society

North Dakota State Health Officers Association

The Minnesota Academy of Medicine

The Soo Railway Surgical Association

The Sioux Valley Medical Association

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MINNEAPOLIS, MINN., MAY 15, 1931

A SELF-APPOINTED HEALTH AUTHORITY

Sometime ago the Parent-Teacher Broadcaster of Minneapolis solicited an article on the control of childhood tuberculosis which was published in the March issue.

In the April issue appeared, under the title of an open letter to the Broadcaster, the following:

Minneapolis, Minn., April 2, 1931.

Editor, Parent-Teacher Broadcaster,

Minneapolis, Minnesota.

Dear Madam:

I read with interest an article in the March Parent-Teacher Broadcaster on "Control of Childhood Tuberculosis," which contained the following recommendation:

"The simple and harmless intracutaneous tuberculin test (Manteaux) should be applied to every child."

In all the history of medicine, nothing has been more fully proven than the harmfulness, the danger, and even the deadliness of tuberculin when used on human beings, children and adults alike. This information is readily available for any person, lay or medical, who cares to look it up, and covers from the days of Dr. Koch, the great German physician who first tried tuberculin out on a large scale so disastrously, right down to the present time.

It is a fact, repeatedly proven, that the action of tuberculin, when introduced into human beings, often causes an old infection of tuberculosis that had become entirely walled off (calcified), and that would probably never again have affected the health of the person in any way, to once more become active and infective, and in some cases actually deadly, killing persons whose former

tuberculous infection has been fanned into new life by the tuberculin injections, and persons with their latent tuberculosis again made active by tuberculin once more become a menace to the health of those with whom they come in contact.

Parents will do well to thoroughly investigate the merits of the constantly increasing number of testing and immunizing processes which they are urged to use on their children, before subjecting them to any of these processes.

Very truly yours,

H. E. Soule,

Member of West High Parent & Teacher Ass'n.

3349 Girard Avenue South.

In the same issue of the Broadcaster, an editorial appeared under the title "The Next Preventive Job," in which some very splendid statements were made concerning the control of communicable disease. One statement is as follows: "The records indicate that preventive medicine is mastering its job."

Another editorial in the same number is entitled, "The Greatest Institution." For this editorial some White House Conference material was used. In discussing the persons of this country under eighteen years of age, the following statement is made:

"Upon the training that they receive depends the future of the nation. The question of whether or not tomorrow they will come into their maturity well equipped, with strong bodies, a good education, and high ideals, ready to take their place in the industrial, political, and social life of the government, is largely determined by those who today are in position to direct their destinies."

Because of the validity of their editorials on health, an inquiry of its policies was made of the Broadcaster. From the editorial office came the following statement: "There is such a diversity of views concerning the use of vaccines, sera, etc., that we feel anyone with an opinion should have an opportunity to express it in the Broadcaster."

Further conversation revealed the fact that the Broadcaster has no regard for qualifications; in other words, a dog catcher or a manufacturer or distributor of a corn cure, would have just as much right to express an opinion on the reduction of fractures as a first-class orthopedic surgeon. Indeed, the former, according to the policies of the Broadcaster, could, through its pages, make a vicious attack upon the latter.

It would seem that the Parent-Teacher Associations are too intelligent bodies to be willing to allow their organ to be put to such base uses, and it is to be hoped that in this instance the organ does not represent the true feeling of the entire Association. Yet, as the official organ, it wields much influence, and since this publication, through its editorials, leads the public to believe it is interested in the good health of school children, and then betrays that public by foisting upon them the opinions of unqualified writers on health, a protest must be made. The very slightest investigation of this open letter would have proved it based wholly upon prejudice, superstition, and ignorance.

The Broadcaster has solicited and published several articles on health in the past, but in the face of this recent action the possibility cannot but come to mind that such articles were solicited as targets for quackery.

The publishing of this letter has already brought severe criticism upon the policies of the editorial board of the Broadcaster. Yet the most severe criticism possible is merited by a group which makes the gesture of speaking with authority, and at the same time is not only so poorly informed as to allow an open letter based upon such falsehoods to be consigned to anything save the waste basket, but also refuses to consider an investigation as to qualifications of any and all writers who care to assume the role of authority on health questions. Without a doubt, had the question been one of actual pedagogy, the writer's qualifications would have been inquired into immediately.

THE JOURNAL-LANCET stands ready to support the medical profession of Hennepin County in any attempt to remedy this situation which jeopardizes the health of every school child.

J. A. M.

THE MINNEAPOLIS SCHOOL BOARD

On April 28, the Minneapolis Tribune published an article on a proposed closed meeting of the Minneapolis School Board, which kindled fires among many groups in Minneapolis. The Tribune

is to be congratulated on giving the public some truths which a small group of individuals had hoped to keep secret.

If this had pertained to the teaching of mathematics, geography or any one of many subjects, it would not have been of such vital importance, but unfortunately it pertained to the health of the children of the Minneapolis Schools.

A committee of the School Board of some six years standing was to make a report and recommendations concerning the future teaching of health. Certain members of this committee had attended a recent meeting of the American Physical Education Association in Detroit, Michigan. Although it had been announced that the report would be presented, and any necessary action taken would be behind closed doors, two members of the Hennepin County Medical Society were appointed to attend the meeting if at all possible. When we arrived, a heated discussion was in progress. Very much to our amazement, the member making the report for the committee stated that he had interviewed large numbers of physical education directors at the Detroit meeting, and they had informed him that practically all of the great cities in the East had removed men with medical training and replaced them with those trained only in physical education; that these men were in complete charge of the health supervision of the school children. True, a few physicians were retained but under the direction and subject to the orders of those without the fundamental knowledge of health. Whether the member making this report actually believes this condition exists in the eastern cities we were not certain. An astonishing fact was that this committee had attended no meeting and interviewed no persons except the physical education directors. No one had thought about sending a delegation to a meeting of a great medical organization such as The American Medical Association, The American Public Health Association, or the American Association of School Physicians; in other words, those who hold the fundamental knowledge of health had not been consulted.

The committee report seemed to be one based upon prejudice, one which had a strong leaning towards the expenditure of money for teaching the girls and boys to do hand springs rather than protecting them against diseases while in school and teaching them how to keep well throughout life. The members of the medical profession agree that physical education is important, and that it is one phase of health work, but it would be unsound, illogical, and absurd to place the

supervision of the development and health of school children of Minneapolis in the hands of anyone who is not medically trained. While the physical development of the school children is without doubt of importance, just what ability or training has a physical education director for coping with the problem of disease among school children? Yet the plan presented would subordinate the present director of hygiene and all future directors to the physical education director.

The members of the Minneapolis School Board who are so shortsighted as not only to advocate but to work whole-heartedly for such a measure deserve the sharpest condemnation of every taxpayer and voter in the city, and especially the criticism of the medical profession. The entire board is not of the above caliber, or despair alone would be left us. The practical question then arises—how much longer shall we allow such vital questions as the future health of the city's children to be decided by some prejudiced and ill-advised persons who hold positions on the Minneapolis School Board?

J. A. M.

OUR FUTURE PLANS AND POLICY

We fully realize that in order to properly act as the official journal for the groups we represent that *THE JOURNAL LANCET* must be a truly modern and progressive journal.

Since the death of our Editor, Dr. W. A. Jones, the Editorial Board have been making decided efforts to improve our publication. The first major step in this progress was the Sixtieth Anniversary Number. It was gratifying to receive the innumerable letters, phone calls and personal congratulations on this fine issue.

The April 15 issue of *THE JOURNAL LANCET* was devoted exclusively to the subject of Tuberculosis. This special number was in order at the time, as the month of April of each year is set aside for the Early Diagnosis Campaign of the National Tuberculosis Association. *THE JOURNAL LANCET* was glad of the opportunity to cooperate in this worthy cause.

The next issue, June 1, will be set aside as a special Golden Anniversary Number, commemorating the Fiftieth annual meeting of organized medicine in the Dakota Territory. Papers pertaining to the history of North and South Dakota will be in this issue.

Several other plans for the development and betterment of *THE JOURNAL LANCET* will be announced in an early issue. We believe that the

issuance of *THE JOURNAL LANCET* twice a month is a pliable factor in keeping the medical profession abreast of the developments of the day. This is the only medical journal in America which is published twice a month, and the acceptance of this plan over a period of sixty years indicates its present worth. News is always news when published in *THE JOURNAL LANCET* and timely articles and papers are enabled to appear at the earliest possible moment.

It is the aim of the present Editorial Board to have *THE JOURNAL LANCET* continue to fulfill a definite need in medical journalism, as it has for the past sixty years. With the history and background which it has we believe it will accomplish this to a greater extent in the future than it has in the past.

The Publisher.

DR. ARNE OFTEDAL

Dr. Arne Oftedal, one of the senior members of the Fargo Clinic, died at St. Luke's Hospital, Fargo, North Dakota, April 9, 1931. Dr. Oftedal was born in Minneapolis, Minnesota, May 21, 1879. He graduated from the medical school of the Hamlin University in 1901 and began practicing at Bisby, North Dakota, where he remained until 1909; at this time he moved to Halstad, Minnesota, where he practiced until 1916 when he came to Fargo and became associated with the Fargo Clinic group with whom he was connected at the time of his death. In 1922 he was appointed a member of the State Board of Health, in which capacity he served until the time of his death.

Dr. Oftedal was a man of high ideals, excellent medical training, conscientious in the performance of his duties and held in high esteem by his medical associates as well as by his patients.

He is survived by his widow, his son Sigmund of Long Beach, California, and a daughter, Mrs. Charles Lawrence, Salt Lake City, Utah.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.
Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

Who's Who in Public Health in North Dakota

Syver Vinje, M. D., County Health Officer of Traill County, North Dakota. Dr. Vinje scores high as a health officer. He has a very comprehensive program for 1931 and is a leader in the work among the various unofficial health agencies of his jurisdiction. He has been secretary of the Traill-Steele District Medical Association for sixteen years and has served as Health Officer of Traill County for many years.



Syver Vinje was born in Norway in 1869, the son of Olof C. and Marthea Vinje. He came with his parents to Otter Tail County, Minnesota, in 1882. He was graduated from the State Normal School, St. Cloud, Minnesota, in 1892; took special courses in mathematics at Columbian University, Washington, D. C.; was instructor in the Normal School at St. Cloud for one year and in the Normal School at Mayville for four years. He was graduated from the University of Minnesota Medical School in 1902, and immediately thereafter located at Henning, Minnesota, where he remained until 1912, acting as local surgeon for the Soo Line Railroad at that place. In 1904 Dr. Vinje and Rebecca Halvorson of Henning, Minnesota, were married. They have four children, Olaf Robert, Harold Godwin, Ralph, and Edmund. Dr. Vinje has resided at Hillsboro since 1913 and is a member of the District, State, and American Medical Associations.

We are pleased to present the progressive County Health Officer of Traill County—Dr. Syver Vinje.

Necrology

The Committee on Necrology at the State Health Officers' Conference submitted the following resolution:

"Resolved, that the members of this Association note with regret the passing of two active members, Dr. Arne Oftedahl of Fargo, President of the Advisory Council of the State Department of Health, and Dr. Joseph Rogers, of Alexander, both men in the foremost ranks of the profession, always leading the fight for a better and purer social life, and, men whom the medical world as well as the state at large could ill afford to lose. And in recognition of their worth and in sympathy for their loved ones, we do hereby memorialize and record our regret, and request that their families be presented by our Secretary with a copy of this resolution."

Child Hygiene Activities for the Next Quarter

The Bureau of Child Hygiene and Public Health Nursing is planning an intensive campaign for the last three months of this biennium. Over 250 applications

have been received for local child hygiene conferences. We now have a personnel of two physicians and two nurses for the remainder of this period. They will be formed into two field groups. In this way 25 counties will be visited. It is obvious that many local communities will be disappointed. Even with two units for the short period of time only a portion of the demand can be supplied.

Industrial Accidents

Industrial accidents, according to present figures, resulted in 62 deaths last year in North Dakota. Fifty-eight per cent of these occurred on farms. The deaths resolve themselves into certain standard classifications, such as power machinery, animal drawn vehicles or machinery, railroad, electricity, gas, falls, falling objects, etc. This is essentially a male hazard, the distribution being 59 males and 3 females. The greatest number of these deaths occurred in the 15-54 age group. September led all other months in industrial deaths, while Monday and Friday tied for first place. From four to five in the afternoon was the most dangerous hour.

Resolutions Passed by the State Health Officers' Association

"In view of the relationship between undulant fever in human beings and contagious abortion in cattle, we would respectfully urge and recommend to the State Board of Administration that the dairy herds of all state institutions be tested by the State Sanitary Board to determine the prevalence of this disease in such herds, and if contagious abortion is found present, that pasteurization of all dairy products from such herds be required until the herds are shown to be free from this disease. This recommendation is made in view of the fact that the cattle in one such herd have been shown to have a high percentage of such infection.

"Since public swimming pools offer a possible source of transmission of numerous communicable diseases, we respectfully recommend that the State Board of Health pass rules and regulations governing the care and maintenance of such pools and furnish copies of these rules to the superintendents of same.

"We would recommend a continuance of the efforts of the State Board of Health to obtain a directory of possible donors of convalescent serum for use in poliomyelitis cases.

"That this organization assist and encourage the State Board of Health in its program for the development of full time county or district health units."

Diphtheria Immunization Programs

A county wide diphtheria immunization project is being carried out in McKenzie County, where there is no county health officer. The county is paying for the immunization material and also for its administration where parents are unable to pay. In Benson County a campaign is also in progress. Many school districts have already been immunized, the township boards and school boards taking care of the financial end of the campaign in these localities.

SOCIETIES

Minnesota State Medical Association Meeting

The Seventy-eighth Annual Session of the Minnesota State Medical Association held in Minneapolis, May 4, 5, and 6, was one of the most successful sessions the association has ever held.

The first meeting of the House of Delegates, Monday evening was very well attended and some very constructive work was suggested.

The scientific program was well attended throughout the entire session. Tuesday morning the entire program was in the Nicollet Hotel Ball Room. All papers were interesting and well presented. The guest speaker, Dr. George Gray Ward, Jr., of New York, gave an excellent discussion on "Carcinoma of the Uterus."

The afternoon program was held at the University of Minnesota. This took the form of a 4 ring circus and many of the visiting doctors were busy hurrying from one amphitheater to the other attempting to cover all subjects in which they were particularly interested. A great variety of clinics was presented. Thirty-two clinicians presented clinics during the afternoon. Patients were presented to represent almost every ordinary clinical condition. The program in each case was put on with snap and precision. The fact that each amphitheater was packed to full capacity was evidence of interest in the work presented.

The Banquet Tuesday evening was attended by nearly five hundred people and an interesting program was presented. Dr. C. H. Mayo acted as toastmaster. Dr. Stephen H. Baxter, President of Hennepin County Medical Society welcomed the State Association.

Mrs. Blake, President of the Woman's Auxiliary, spoke for that organization. Dr. L. Sogge, President of the State Association gave an interesting discussion on Medical Economics. Dr. A. S. Hamilton in behalf of the state association presented Dr. Workman of Tracy, Minnesota, with a very fine watch, a token of respect for his over fifty years of faithful work for medical standards. Congressman W. I. Nolan gave the address of the evening. Congressman Nolan has always been a friend of the medical profession as his address on this occasion demonstrated.

Wednesday the entire program was held in the Nicollet Hotel Ball Room. An interesting series of papers was given both morning and afternoon. The audience manifested their interest by remaining almost intact to the end of the program.

Officers for the ensuing year were elected by the House of Delegates at the Tuesday Luncheon. Dr. M. S. Henderson, Rochester, Minnesota, was elected President, Dr. B. S. Adams, Hibbing, Minnesota, was elected first vice president, and Dr. A. E. Hedback, a member of the editorial board of this paper, was elected second vice president. Dr. E. A. Myerding was elected executive secretary and Dr. W. H. Condit of Minneapolis, treasurer.

The next annual meeting is to be held in St. Paul.

Hennepin County Medical Society

The regular monthly meeting of the Hennepin County Medical Society was held Monday evening, May 4, 1931. The result of the Election of Officers who will take

office in October was announced as follows: President, Dr. Moses Barron; First Vice President, Dr. J. C. Michael; Second Vice President, Dr. W. D. White; Executive Committee, Dr. Olga S. Hansen, Dr. Ralph T. Knight; Board of Censors, Dr. C. R. Drake, Dr. R. T. LaVake; Board of Trustees, Dr. E. L. Gardner, Dr. A. S. Hamilton; Ethics Committee, Dr. E. S. Geist, Dr. Ray R. Knight, Dr. F. C. Rodda, Dr. H. L. Ulrich, Dr. Cecile Moriarty, Dr. Robert Williams; Delegates, Dr. T. A. Peppard, Dr. W. A. Fansler, Dr. R. T. LaVake, Dr. Julius Johnson; Delegates, Dr. A. E. Benjamin; (alternates) Dr. Hugh Arey, Dr. D. A. MacDonald, Dr. G. T. Nordin.

The principal feature of the meeting was an address by Dr. Tobias Birnberg describing his visit in Russia in 1930, and illustrated by motion pictures which he had taken. The address has been given extended and complimentary notices elsewhere, and it fully satisfied the expectations which those notices had aroused.

This was the evening preceding the opening session of the Annual meeting of the Minnesota State Medical Association, which met in Minneapolis this year. An invitation to members of the State Association to attend the meeting of the Hennepin County Society was printed in the Program for the State Association Meeting, and a good many out-of-town guests were present. An invitation had been extended also to the wives of the members, and was accepted by a large number of ladies. The result was one of the largest meetings that the Hennepin County Society has ever held, over three hundred persons being present and "Standing Room Only" signs would have been in order.

At the close of the meeting coffee and sandwiches were served by members of the Women's Auxiliary. The services performed by the Auxiliary this year have contributed very materially to the success of the meetings of the Society. A resolution in acknowledgment of the value of these services was presented by Dr. Robert Williams and adopted by unanimous vote.

The JOURNAL-LANCET congratulates Dr. Barron on his election, and offers him its support in any way that can contribute to the success of his administration and the continued prosperity of the Hennepin County Society.

Minnesota Radiological Society

The annual meeting of the Minnesota Radiological Society was held in Minneapolis May 4, 1931. The following program was presented:

ROUND TABLE DISCUSSIONS—1. Therapeutic X-ray Dosage and Measurement Problems, conducted by Dr. E. T. Leddy, Rochester. 2. Gastric Ulcer, conducted by Dr. J. Richards Aurelius, St. Paul. 3. Traumatic Spine Lesions, conducted by Dr. Gage Clement, Duluth. 4. The Chest in Children, conducted by Dr. Malcolm B. Hanson, Minneapolis.

INFORMAL DINNER—ADDRESS: The Inter-vertebral Disc, by Dr. Emil S. Geist, Minneapolis, Pathologic and Roentgenologic Study of Joint Diseases by Dr. R. K. Ghormley, Rochester.

The present officers were re-elected for the coming year as follows: Dr. B. R. Kirklin, Rochester, President; Dr. Gage Clement, Duluth, Vice-President; Dr. Leo G. Rigler, Minneapolis, Sec.-Treas.

PROCEEDINGS MINNEAPOLIS CLINICAL CLUB

Meeting of February 12, 1931.

The regular monthly meeting of the Minneapolis Clinical Club was held in the Hennepin County Medical Society Lounge in the Medical Arts Building on Thursday evening, February 12, 1931. Dinner was served in the Auditorium at 6 o'clock and the meeting was called to order by the President, DR. MOSES BARRON, at 7 o'clock. There were 20 members present.

Minutes of the January meeting were read and approved.

The Secretary read the Annual Report of the Treasurer, which was accepted and placed on file.

Upon ballot the following officers were elected for the ensuing year:

President DR. F. H. K. SCHAAF
Vice-President DR. A. H. BEARD
Secretary-Treasurer DR. H. B. DORNBLASER
(re-elected)

The scientific program of the evening was as follows:

DR. S. R. MAXEINER reported a case and showed specimen of a "Mucocele of the Appendix." Published in Minnesota Medicine.

DR. C. A. MCKINLAY reported a "Case of Pulmonary Abscess Following Tonsillectomy, Terminating in Fatal Hemoptysis."

Certain unusual features of this case have been considered of sufficient interest to justify its report. A series of X-ray films aid greatly in visualization of the pathologic process even though autopsy was not obtained.

Case 39957: Female, single, aged 24, pupil nurse, was first examined January 25, 1930, with the complaint of persistent cough. On December 27, 1929, her tonsils were removed under local anesthesia. About two weeks later pain developed in the right side of the chest, lasted three days, and was followed by cough and purulent expectoration. In September, 1929, her entrance physical examination had revealed slight hypertension (144 to 154 mm. Hg systolic), albuminuria, and infected appearing tonsils, the removal of which was recommended. She was advised to continue under the care of her physician.

The patient next appeared February 19, with the complaints of cough with purulent sputum, fever, night sweats becoming worse during the previous week, and a ten-pound weight loss since tonsillectomy. After admission to the University

Hospital, examination showed fairly good nutrition and color, and medium moist râles in the right interscapular region which had cleared by the time of discharge. The leucocytes were 16,900. Stereoscopic plates were made of the chest (Fig. 1) and showed a dense shadow involving the lower half of the right upper lobe with an area of rarefaction in its medial portion. Dr. Leo Rigler suggested as the first possibility an abscess superimposed upon a pneumonia.

February 27, one week later, no definite abscess could be made out by X-ray (Fig. 2). The report was probable resolving pneumonia.

March 4, X-ray report (Fig. 3): resolving pneumonia almost cleared.

Course in Hospital: Fever existed for the first five days with a maximum of 102.6°. For the succeeding eleven days the patient was entirely afebrile and was discharged.

March 10. Temperature 98°. Improved.

March 11. X-ray report (Fig. 4). No change.

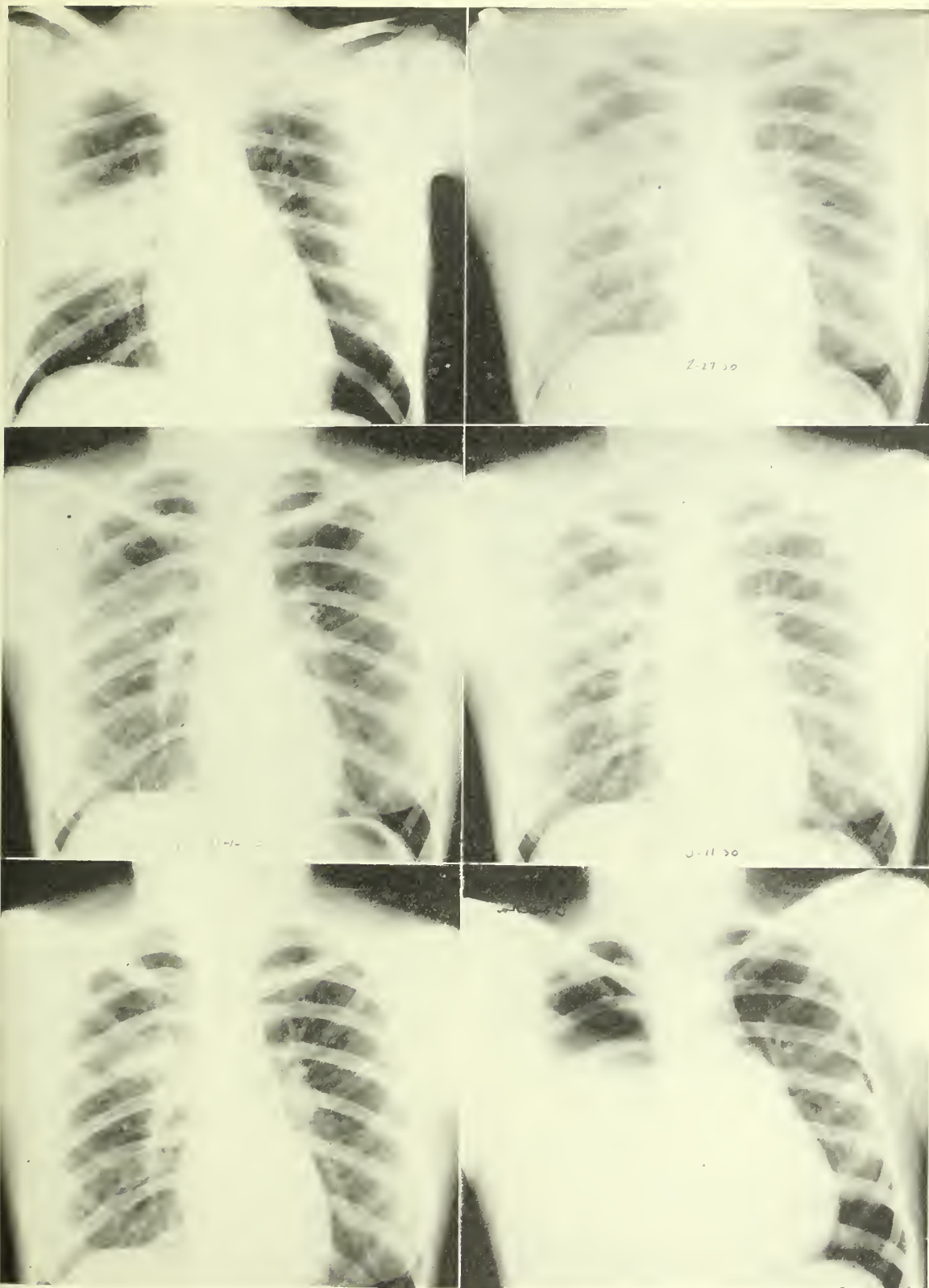
March 22. While on duty the patient had hemoptysis amounting to one-third of a cupful and she was sent to the ward where she stayed one week without increased temperature or further hemoptysis.

March 25. X-ray report (Fig. 5). Some improvement, though findings have not entirely cleared up. The sputum was negative for tubercle bacilli on several occasions. The leucocytes were 11,500 with 86 per cent of polymorphonuclear forms.

She continued her treatment at home under the care of her physician and during the summer she progressively became worse, with fever, purulent sputum, and weight loss. Pneumothorax was done by Dr. J. A. Myers.* The patient refused all further hospital study and treatment, except that on November 10 to 12 she returned to Asbury Hospital for a chest plate. X-ray report by Dr. Malcolm Hanson. Negative left chest and a hydropneumothorax right chest with thickening of the pleura. The temperature varied on three days from 101° to 102° and the pulse from 100 to 130. There was increased emaciation, pallor, and evidence of toxemia. Careful study of the sputum for all types of organisms, including spirilli, revealed a preponderance of streptococci.

The patient had several pulmonary hemorrhages and died November 29, 1930, following severe hemoptysis.

*Thanks are due to Dr. J. A. Myers for part of the record.



NOTE: Figures 1 to 6 show the pulmonary abscess and its progress as described in the text.

The outstanding features of this case are:
1. Onset of symptoms two weeks following tonsillectomy.

2. The elimination of pulmonary tuberculosis by the repeated study of the sputum for organisms, the prompt early remission with subsidence

of infiltration and absence of fever or other systemic reaction, the location and appearance of the lesion suggesting pneumonitis rather than tuberculosis, and the negative tuberculin reaction (Mantoux).

3. The early recognition by the roentgenologist of the nature of the process.

4. The period of almost complete clearing of the process as evidenced by X-ray and absence of symptoms, and the development during that interval of hemoptysis which suggested a minimal but necrotizing process that finally dominated the picture.

5. Extension of the process with marked toxemia from suppuration and weakness and recurring pulmonary hemorrhage, with fatal termination about eleven months after onset.

This course of events suggests for similar cases in the future a more prolonged rest period even when the process has seemingly become quiescent.

DR. A. H. BEARD: I think DR. CAMP had a case similar to this, where the sinuses were involved and the patient had an abscess in the chest. Tubercle bacilli were not found in the sputum, but rest in bed for a period of a month or two cleared the condition. Local anesthesia was used in that case.

DR. W. E. CAMP: That was an acute sinus case. The patient had an acute posterior ethmoiditis and sphenoiditis. The antrum was irrigated, but found clear. We went into the posterior ethmoid and sphenoid and found thick creamy pus in both. The patient got along very well for five or six days, then developed an abscess in the right lung that manifested itself by a large, frank hemorrhage. The abscess drained well, and healed without further trouble. After leaving the hospital the patient developed a paralysis of the external rectus of the right eye. This disappeared gradually, and she has been well ever since.

DR. F. W. WITTICH: I saw one case like this about five years ago, a dentist's wife who had almost a parallel history. She had a tonsillectomy under local anesthesia and developed a pulmonary abscess with repeated profuse hemoptyses, dying from a hemorrhage. I am inclined to think that these cases are not due to direct aspiration under local anesthesia, but that they are mostly blood borne affairs. I would like to raise the question whether any other members have had any evidence on the subject. Where the suppuration is quite extensive, hemoptysis may be very sudden and fatal.

DR. F. H. K. SCHAAF: In favor of DR. WITTICH's suggestion that these cases may be blood borne, I can cite one case which occurred at the University Hospital. This boy had had a sore throat but no operation. A few days later he had a profuse hemoptysis and subsequent lung abscess. He recovered.

DR. KENNETH PHELPS: I would like to report the case of a child who had tonsillectomy under general anesthesia and later developed some trouble in the chest. It was several weeks before a diagnosis was made. The child had a tooth knocked out and the trouble was due to this foreign body in the lung. It resulted in gangrene of the lung. Bronchoscopy did not save the child's life.

DR. MOSES BARRON: I do not believe that it has yet been settled whether the lung infections following tonsillectomy are aspirated or are blood borne. Pathologically

it is difficult to decide. If the infection is blood borne, why is it that the abscess is generally single and not multiple? It may be from a small mass of material in the tonsil. The difference between the two conditions is that in the case of a caseous gland which ruptures into a bronchus it keeps feeding the bronchus for a considerable period of time, while in the case of a tonsil it does this only momentarily. The caseous gland consists of a mass of necrotic tissue surrounded by a wall of tuberculous granulation tissue. This tuberculous granulation tissue contains the infecting material and will continue throwing off the bacilli long after the first rupture takes place. This is why one can get a bronchogenic pneumonia from a ruptured caseating lymph node. In the case of a tonsil, the condition is entirely different. The infecting material is given off only momentarily and abruptly. For that reason even if it spreads into the bronchi the abscess would be only a single one.

DR. C. A. MCKINLEY: It is not so much to be wondered at that pulmonary and pleural suppurations occasionally follow tonsillectomy, as that they do not occur more frequently. For under either local or general anesthesia aspiration of material from the throat may occur, unless, and even if, all possible precautions are taken in regard to the position of the patient, to the clearing of blood and mucus from the throat, and to the degree of tissue infiltration or of general anesthesia.

DR. MOSES BARRON (in closing the meeting): I certainly wish to thank all the members of the Society for the honor and privilege of being President of this organization during the past year. It has been a distinct pleasure to occupy the office this year because of the support from all the members. I think that one of the great features of this organization is the fact that we come together here for sociability as well as for carrying on discussions in clinical medicine, and the trend has been that the better we are acquainted with one another the better we get along. The present group of officers is turning over the organization to the new officers in very good condition, both from the social and the financial standpoint. The financial report this evening quite surprised me. We undertook several things this year which involved considerable expenditure of money and yet we end the year with a good balance in our treasury. The excellent support from the members has resulted in properly fostering good fellowship as well as a better understanding of scientific medicine. I wish again to thank you for the confidence you had in me in electing me your President.

And now as to my paper this evening, since the discussion of nephritis is rather a long one, and since it is nearly time to close the meeting, I think it would be better to postpone this paper until the next meeting. (Upon vote, a motion was carried that the paper by Dr. Barron on "Present Day Conception of Nephritis and Its Treatment" be carried over to the next meeting).

The meeting adjourned.

H. BRIGHT DORNBLAGER, M. D., *Secretary*.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. F. O. Woodward, has been appointed as Health Officer of Jamestown, N. D.

Dr. H. H. Aldrich who has been in active practice at Roscoe, is now located at Andover, S. D.

Dr. George H. Holt, Jamestown, N. D., has received a Pilot's license that permits him to fly and carry passengers.

Dr. W. H. Cuthbert, the well known physician at Hillsboro, N. D., has been appointed City Health Officer of that city.

Dr. H. F. Bayard, formerly of the Mayo Clinic at Rochester, has opened offices in Minneapolis, and will specialize in proctology.

Dr. Wm. Friesleben, Sauk Rapids, Minn., is the new president of the Stearns-Benton Medical Society and Dr. W. H. Rumpf, St. Cloud, secretary.

Dr. E. L. Tuohy, Duluth, prominent physician of that city, was elected governor of the Ninth Rotary District, at the recent meeting held at Rochester.

Dr. J. F. Corbett, chief of the hospital staff at Abbott Hospital, Minneapolis, presented the diplomas to the graduating class at the hospital this month.

Dr. Arne A. Stemsrud, who has been in active practice for the past thirty years at Dawson, Minn., died recently from a stroke while on a professional call.

Dr. G. S. Adams, Yankton, S. D., has been reappointed for a four year term as one of the commissioners of the feeble minded homes of South Dakota.

Plans are being worked out for a new hospital at Wahpeton, N. D. While plans for the building have not yet been completed, it will be modern in every respect.

Dr. O. S. Neseth, Kenyon, Minn., died last month after several severe attacks of grippe. Dr. Neseth was a graduate of the Northwestern University, Chicago.

Over \$6,000 has been turned over to the Shriners Hospital for Crippled Children at Minneapolis, in the little scraps of tinfoil that have been recently collected.

The bill calling for \$375,000 for construction of a State Psychopathic Hospital at the University of Minnesota was defeated at the recent meeting of the State Legislature.

The ninth annual clinic of the McKennan Hospital staff was held at Sioux Falls last month. A large attendance was present to enjoy the fine program that had been arranged.

Plans are under way for the building of a modern hospital at Buhl, Minn., to cost about \$100,000. It will be a fireproof building with all the modern equipments of the present day.

Dr. T. N. Yeomans, Minot, N. D., who has been spending several weeks in California, is back at his office and resumes active practice. Mrs. Yeomans accompanied him on the trip.

The annual meeting of the State Nurses' Association of South Dakota, will be held at Mitchell, on May 25 to 28. An attractive program is being arranged for the four days' sessions.

The Northern Minnesota Medical Association will hold its annual meeting at Hibbing, on September 18 and 19. Dr. W. L. Burnap, Fergus Falls, is chairman of the program committee.

Dr. W. Stuart Leech, Roseau, Minn., died last month from a sudden attack of heart trouble. Dr. Leech was well known in that section of the state, as he had been in active practice for over thirty years.

Dr. C. R. Senescall, who has been in active practice at Veblen, S. D., for the past 15 years, has purchased the practice of the late Dr. M. A. Kiefer, at Sleepy Eye, Minn., and will locate there about June 1.

Dr. Leo M. Crafts, Minneapolis, has been named as one of the delegates to the International Neurological Congress which meets in Berne, Switzerland, the last of August. Dr. Crafts will spend several weeks in travel on the Continent.

Construction of the Miller Memorial Hospital, Duluth, will be started this spring, as all legal troubles have now been settled by the appointment of six prominent citizens who will have full authority to erect the building at a cost of nearly \$1,000,000.

Dr. Chas. S. Bigelow, Dodge Center, Minn., died recently at his winter home in Lynwood, Calif. Dr. Bigelow was well known in all sections of the state as a leading member of the profession. He was a graduate of the University of Michigan.

At the last meeting of the Medical Society at Pipestone, Minn., two interesting papers were presented. Dr. T. J. Billion, Sioux Falls, "Diagnosis of Carcinoma of the Gastrointestinal Tract," and Dr. N. J. Nessa, Sioux Falls, "Hypertrophy of the Thymus."

Dr. Grace Medes, research physiological chemist in the Medical Department of the University of Minnesota Medical School, has recently been awarded the two hundred and fifty dollar prize by the Minnesota Society of Internal Medicine for her work on the tyrosin derivatives.

Dr. Ward, New York City, founder of the American College of Surgeons and noted cancer authority of Cornell University, was one of the principal speakers at the 78th annual meeting of the Minnesota State Medical Association at the Nicollet Hotel, Minneapolis, May 5 and 6.

Dr. Franklin R. Wright, Minneapolis, appeared before the Camp Release District Society in Olivia, Minn., on April 27th. Instead of reading a paper, he answered questions for three hours on Venereal and Genito-Urinary Diseases. Questions were furnished by members of the Society.

The seventh annual conference of the North Dakota Health Officers' Association was held this month at Bismarck, a very attractive and interesting program being presented. Officers of the Association are Dr. R. W. Allen, Bismarck, president; Dr. Will H. Moore, Valley City, vice president; Dr. A. A. Whittemore, Bismarck, secretary-treasurer.

Dean E. P. Lyon, head of the medical school at the University of Minnesota, has joined in backing the demand of the New York Academy of Surgeons that restrictions now imposed on the medical profession regarding birth control be removed. Dean Lyon declared "such restrictions are insulting to the physicians, who should know what is best for the health of the public."

The Red River Valley Medical Society held its April meeting at Crookston and five doctors were

elected as active members. Dr. J. R. Manley of Duluth was the guest of the Society and spoke on "The Office Treatment of Diseases of the Cervix." Dr. G. S. Wattam, of Warren, discussed "Pulmonary Diseases," and Dr. O. E. Locken, of Crookston, told of the use of the electrocardio-

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). Dr. William A. O'Brien, M. D., Associated Professor of Pathology and Preventative Medicine, Medical School, University of Minnesota, is speaker. The program for the month of June will be as follows: June 3—Ringworm of Feet June 10—Toxemia of Pregnancy. June 17—Erysipelas. June 24—X-ray and Radium in Treatment of Cancer.

A regular quarterly meeting of the Devils Lake District Medical Society met at Devils Lake, N. D. A dinner was served after which the business of the meeting followed. Dr. H. E. French, Dean of the School of Medicine at the University of North Dakota, addressed the group on botulism. Dr. A. K. Saiki, a member of the State Board of Health and also an instructor in the School of Medicine at the University, was also a speaker. During the business meeting a paper was read by Dr. W. C. Fawcett of Starkweather. Five counties are included in the Devils Lake district. Twenty-one medical men of the district were present.

The regular meeting of the Whetstone Valley District Medical Society was held in Milbank, S. D., last month. Dr. N. J. Nessa, of Sioux Falls, gave an illustrated talk on "Roentgenological Diagnosis of Disease of the Gastro-intestinal Tract." Dr. C. W. Forsberg, of Sioux Falls, gave a talk on "Electrocardiographic Diagnosis of Heart Disease" with demonstration of the portable electrocardiograph. Dr. A. W. Pearson, of Peever, discussed "Medical Legislation in the Past Session of the South Dakota Legislature." This was an excellent meeting and the papers were thoroughly enjoyed. Dr. F. N. Cliff of Milbank, S. D., the president of the local society, presided. A poll of the vote showed that the society did not favor an amalgamation with the Watertown District Medical Society.

NATIONAL HOSPITAL DAY

The medical profession should be interested in National Hospital Day, as it is one of the few legitimate ways of giving the public an opportunity to become acquainted with the modern methods of medicine.

This year a great deal of publicity was given through newspapers, window displays, and the radio. Radio stations throughout the country gave hours of valuable time to the cause, without charge, and the largest advertising hours, such as the Pepsodent Company, Eastman Kodak Company, Old Dutch Cleanser, and many others gave time in their programs to further the movement. It is said more than three hundred radio announcements mentioned National Hospital Day, and urged the public to visit their local hospitals.

With the current interest in the costs of medical care, it is important that the public understand that the costs of *scientific* medical care are fully justified by the more efficient and scientific methods of diagnosis and treatment. The stay in hospitals has been greatly reduced; the death rate has been lowered; great advancements have been made in the prevention of disease. This can best be shown where the work is done, in the Modern Hospital.

A hospital is merely the "workshop of the doctor" and he should encourage all of those with whom he comes in contact to become familiar with the hospital, thereby causing a friendly attitude toward the medical profession. When the public know the facts, they will consider good scientific medical care worth whatever it may cost.

Let us take advantage of all this favorable publicity to offset the misinformation which has been so freely given during the past few years, and have the public willing, so that the Hospital will occupy a place in the community on a par with the school, the church or the fire department.

PAUL H. FESLER, Supt. University Hospital
President-elect A. H. A.

ATTENTION NORTH DAKOTA PHYSICIANS

The North Dakota Legislature of 1931 enacted an Annual Registration Act for Physicians, licensed in the State, effective July 1, 1931.

In order to make this act effective it is necessary to have the name and address of every Physician in North Dakota. Will you help by mailing AT ONCE your name and address to the office of the State Board of Medical Examiners, at Grand Forks.

The annual fee is \$5.00 for those practicing in the State and \$2.00 for those living outside of the State. First registration is payable on or before August

1st, 1931, and on or before January 1st each year thereafter.

Registration blanks will be mailed on July 1st, and on receipt of the registration fee an Annual card will be mailed.

Your Co-operation is of vital importance to the future of Medicine in North Dakota.

LARGE CITIES OF THE UNITED STATES.—A report recently issued by the United States Public Health Service deals with influenza and pneumonia mortality in the 50 cities of the United States that had 100,000 or more in population in 1910. For 35 of these cities, with an aggregate population of nearly 25,000,000, the number of deaths from influenza and pneumonia by weeks are available from September, 1918, to the present time. Deaths for the country as a whole are not available by weeks, and so these data for this large group of cities has considerable significance. To supplement them, monthly influenza and pneumonia death rates have been computed for the same cities for the years 1910 to 1918.

Since 1915 there have occurred ten distinct periods, each of 8 to 31 weeks' duration, in which the mortality from influenza and pneumonia in this group of widely dispersed cities was so greatly increased as to denote epidemic conditions. Minor epidemics prior to the 1918 pandemic occurred in January, 1916, January, 1917, and April, 1918, with a very slight rise in the mortality in April, 1915, also. We are accustomed to think of the epidemic of 1918 as occurring in the fall, and it is true that the enormous peak, which occurred in the middle of October, overshadowed all prior and subsequent recorded epidemics. In addition to this tremendous peak, the epidemic stretched out over a period of 31 weeks, from September 15, 1918, to April 19, 1919, and even as late as the latter part of January, 1920, the mortality from influenza and pneumonia in excess of the expected rates for that season of the year was greater than the excess mortality during the epidemic of 1929. In the early months of 1920 a very sharp epidemic occurred, with excess mortality greater than during any other epidemic since the 1918 epidemic. In February, 1922; February, 1923; March, 1926, and January, 1929, other epidemics occurred, and in May of 1928 there was a slight rise in the influenza mortality which extended to many sections of the country. The combined excess mortality from influenza and pneumonia during these six epidemics that have occurred since the pandemic of 1918 was only about one-half of that of 1918-19.

In addition to the data for the group of cities, this report contains monthly excess death rates for each of the 50 cities throughout the period 1910-1929 and weekly excess death rates for a large number of the cities during the three major epidemics, 1918-19, 1920, and 1928-29. In every one of the various epidemics, even including the pandemic of 1918-19, there is great variation in the severity of the different epidemics in different cities. Moreover, there are periods of excess mortality from influenza and pneumonia in certain cities and sections of the country which are not of sufficient importance to show up in the combined data for the country as a whole.

The report is intended as a rather detailed history of influenza and pneumonia mortality during the past twenty years as a background for the consideration of the present situation with respect to the respiratory diseases.

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Notice

The Post Graduate Course of Ear, Nose and Throat Surgery at the University of Bordeaux, France, will commence July 27, 1931. The course is given in the English language. The class is limited to twelve physicians and is offered by Professor Georges Portmann. For information apply to Dr. Leon Felderman, 413 Mitten Building, Philadelphia, Pa.

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Having retired from practice elsewhere, will sell my equipment of instruments, including Microscope, 3000 power, complete box case of operating instruments for disease and deformities of the Eye, Ear, Nose and Throat, very cheap. All sterilized up to date. Plated and ready. You can save \$200.00. Phone Kenwood 0474 or address 2639 Humboldt Ave. So., Minneapolis.

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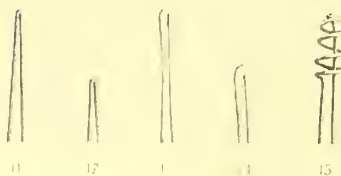
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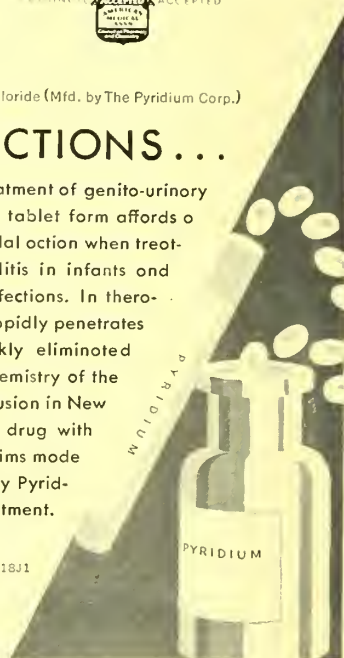
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BIOGRAPHICAL SKETCHES OF

DR. PERCY DICKINSON PEABODY

DR. ANDREW CARR, SR.



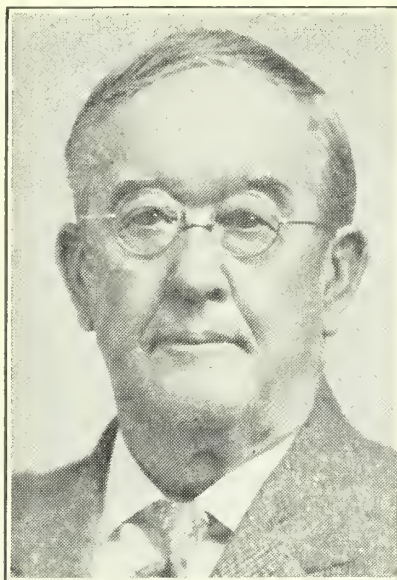
DR. PERCY DICKINSON PEABODY
President South Dakota State Medical Association

Was born October 20, 1878, at Elroy, Wisconsin, son of Horace A. Peabody, M. D., and Emma J. Peabody, of Webster, South Dakota. He received his early education in the public schools of Webster, South Dakota, graduating from the Webster High School in 1894; entered the medical department in the University of Minnesota in 1898, from which he graduated in 1902. He served an eighteen months internship at St. Barnabas Hospital, Minneapolis, Minnesota, then returned to his home at Webster, South Dakota, where he became associated with his father in the practice of medicine. Dr. Peabody founded the Peabody Hospital and Clinic, in 1913.

He is now a member of the South Dakota State Medical Association, American Medical Association, and American Association of Railway Surgeons. A member of the Medical Fraternity, Nu Sigma Nu, and of Delta Tau Delta.

He served as a member of the local draft board of Day County, during the World War.

His brother, Horace Clare Peabody, M. D., is associated with him in the Clinic. In 1902, he married Inez Huntington, of Aberdeen, South Dakota. Five children have been born of this union, and all are living. One son, Percy D. Peabody, Jr., finishes his premedical work this year at the university of South Dakota, and has been admitted to the Rush Medical College, for this fall.



DR. ANDREW CARR, SR.
President North Dakota State Medical Association

Andrew Carr was born near Logansport, Indiana, June 7, 1854, and well remembers when Fort Sumter was fired upon.

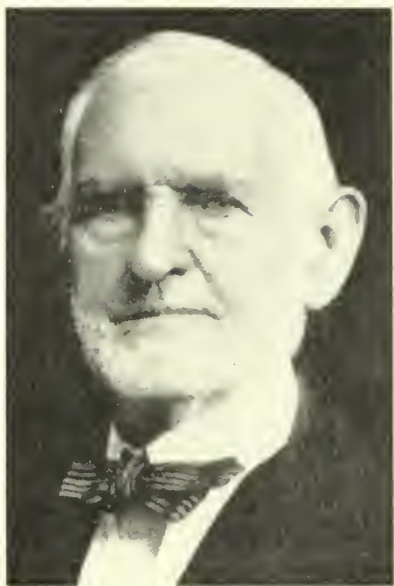
After passing through the common schools of his neighborhood, Andrew attended the First State Normal School at Winona, Minnesota; then taught school several years in Fillmore and Winona Counties. He was a student at Michigan University for a time, and was graduated as an M. D. at Rush Medical College, Chicago, in 1888. He practiced five years, then took postgraduate work for a year. In 1898 took another course at a Postgraduate College. He then practiced general medicine at Northwood, North Dakota, from 1888 to 1902. In the meantime having prepared himself for special work, he moved to Minot, North Dakota, and limited his practice to that of Eye, Ear, Nose, and Throat.

In 1904 the doctor organized the Northwestern District Medical Society, comprising five counties, and was President of same for several years. This Society at the present time is second to none in the State.

He was President of the Park Board for several years and was Treasurer of the Normal School for four years. He was the original founder of Trinity Hospital, and one of the organizers of The Northwest Clinic which owns and operates the finest and best equipped clinic buildings in the Northwest.

DR. WILLIAM JAYNE*

First Governor of Dakota Territory, 1861-1863



DR. WILLIAM JAYNE

William Jayne was born October 8, 1826, in Springfield, Illinois, a son of Dr. Gershom and Sibyl Slater Jayne.

Dr. Gershom Jayne was educated in New York, where he practiced medicine until 1820. In this year he came to Illinois, his route being down the Ohio River from Pittsburgh, by flatboat. He spent six months in southern Illinois, before permanently locating in Springfield, then a place of but a few cabins, known as Calhoun. He began to practice medicine here when there was not a physician north of him in the State. Traveling on horseback in the frontier district, he successfully practiced his profession for forty-seven years. He lived to the age of seventy-five and one half years, and his wife to the age of seventy years.

In 1860 Doctor Jayne was elected State Senator for the district comprising Sangamon and Morgan counties for four years, but resigned in 1861 to accept an appointment from President Abraham Lincoln, to the position of first Territorial Governor of Dakota. At one time he was a delegate to Congress from that Territory. He served as Governor two years but later returned to Springfield.

Doctor Jayne attended such schools as were available in Springfield in his childhood and youth

and was prepared for college under a private tutor. He entered Illinois College at Jacksonville in 1843, and was graduated in 1847 with the degree of B. A. and afterwards he received the degree of M. A. He was one of the founders of the Phi Alpha Society and its first President. The Society was founded September 25, 1845, by seven young men of the College. These founders of the Society in after years delighted to return to the College at reunions, and they were most cordially received and highly honored. Dr. Jayne was the last of these seven men who founded the Society. At his funeral, March 20, 1916, representatives of the College and Society were present.

Doctor Jayne was united in marriage in October, 1850, at Jacksonville to Julia Wetherbee, who was born in Vermont in 1830 and died in March, 1877. Several children were born to Dr. and Mrs. Jayne. Only two, however, lived to maturity, William S., born in October, 1851, and Lizzie S., a daughter, born in July, 1855.

He fulfilled the ideals of service and completeness of life. Governor of the Dakota Territory, delegate to Congress from that Territory, pension agent for Illinois, State senator, mayor of Springfield four terms, member of the commission to complete the present State Capitol Building, member of the Board of Education, President of the Library Board, acting President of the State Board of Charities, he served long and well through them all.

Doctor Jayne was a recognized authority on matters of a political nature, and many reminiscences of political history can be found in several articles that he wrote under the title "Political Representation."

On December 27, 1860, a representative convention was held in Yankton to take action in regard to territorial organization. As an outcome, Congress was memorialized and a bill introduced. On February 26, 1861, it passed the Senate and on March 1, 1861, the House. On March 2, it was signed by President Buchanan, and the Territory of Dakota thus came into corporate existence. In May of the same year, President Abraham Lincoln appointed Dr. William Jayne, a practicing physician of Springfield, Illinois, as Governor. The Territory of Dakota thus has the distinction of having had a regular physician as its first Governor.

*Illinois State Historical Society, South Dakota State Historical Society, by J. F. D. Cook, M. D., Secretary, South Dakota State Medical Association.

BIOGRAPHICAL SKETCHES OF

DR. J. G. MILLSPAUGHFirst President of the North Dakota State
Medical Association*

DR. J. G. MILLSPAUGH

Dr. J. G. Millspaugh was born February 19, 1851, at Battle Creek, Michigan. His parents, natives of Orange County, New York, were both descendants of the early Hollanders of New Amsterdam. Both parents died when he was young. He was educated in his native city, took lessons in Latin and Greek from a private instructor, and was graduated with a degree of A. B. from Hope College, Michigan, in 1872, later receiving the degree of M. A. from the same institution.

In the fall of 1874 he entered the Medical Department of the University of Michigan and was graduated in June, 1876. While at Ann Arbor he was a student of Professor Henry Cheever, lived at his home, and assisted him in the lecture room, and incidentally was the recipient of many valuable favors. To have the privilege of associating intimately with a man of his standing and character and imbibing his enthusiasm and love of work was an experience well worth while. Through his advice he matriculated in the fall of 1876 at Columbia College of Physicians and Surgeons, and graduated from that institution in 1877. He came back to his home town, opened an

DR. SAMUEL B. McGLUMPHYFirst President of the South Dakota State
Medical Association

DR. SAMUEL B. McGLUMPHY

Born August 27, 1837, at Cannonsburg, Washington County, Pennsylvania, he was one of a family of four children born to Samuel and Nancy McGlumphy. Alexander, Andrew, Mary, were the other children. His father was a farmer and coal dealer.

He received his early education in the public schools of Cannonsburg in the winter. During the summers he was tutored by a woman teacher. He attended Waynesburg College, Pennsylvania, one year, he then moved to Illinois where he attended Mount Zion Male and Female Seminary for two years. He read medicine under Dr. Buckworth of Mount Zion, Illinois, for two and one half years. Entered Rush Medical College in 1862, and graduated in 1864.

Practiced medicine in Illinois from 1864 to 1872; he then moved to Nebraska, and practiced there from 1872 to 1879. Moved to Yankton, then the Capital of Dakota Territory, and practiced until 1898. Moved to Sioux City, Iowa, in 1898, and practiced there until 1903. Moved to Vermillion, South Dakota, in 1903 and continued to practice until May 25, 1917, when he died in his home of pneumonia.

He was a member of the State Medical Society of Illinois, State Medical Society of Nebraska, and the American Medical Association. Wrote the Constitution and By-Laws, and was one of the organizers of the Dakota Medical Association

*From Dr. J. Grassick's North Dakota Medicine. Published by North Dakota State Medical Association.

DR. J. G. MILLSPAUGH

(Continued from Page 343)

office and practiced there until the spring of 1882.

In 1879 he was married to Anna M. Zang. They had three children. The eldest, Florence V., is now the wife of Dr. A. W. Ide, of St. Paul. The second, Mark G., resides in Minneapolis, and Lulu B., the youngest, died suddenly while a student in Minneapolis.

Finding his health failing, Dr. Millspaugh in 1882 decided to go to Dakota, then opening for settlement, and farm for a while. He bought a farm near the then town of Garfield, Wash County; built a house, lived out of doors, and soon recovered. When the Great Northern Railway was extended from Larimore to the Park River in 1884 a new town started up, Garfield moved over to the new town site, and Dr. Millspaugh moved with it. Here he remained and practiced until 1891, when he went to Little Falls, Minnesota. He died a few years ago.

Dr. Millspaugh had the honor of being elected the first President of Park River Village Council. It is interesting to note here, the splendid type of men that did pioneer work in the Dakotas. Practicing at the same time in Park River was Dr. Melville, a graduate of the University of Edinburgh, a very scholarly gentleman and a capable physician. Dr. Millspaugh was the first Superintendent of the State Board of Health receiving his appointment from Governor John Miller, succeeding Dr. George Swaine who held that office at the end of the territorial regime.

What has made his name secure in the annals of North Dakota medical history is the active part he took in organizing the profession of the State. To him more than any other person we are indebted for the North Dakota State Medical Association which was organized at Larimore in 1887. As an evidence of the esteem in which he was held by his fellows and of the confidence that was reposed in him, he was elected as its President for three consecutive terms. He is the acknowledged father of organized medicine in North Dakota.

DR. SAMUEL B. McGLUMPHY

(Continued from Page 343)

of Dakota Territory in 1882, and was its President for the first two years.

In 1874 he was appointed Assistant Superintendent of the Nebraska Hospital for the Insane at Lincoln, remaining until 1879. He was appointed Superintendent of the Dakota Hospital

for the Insane at Yankton, Dakota Territory, remaining in that position until 1886, when he resigned to enter the practice of medicine.

He was married May 30, 1865, to Amanda J. Dillon of Springfield, Illinois, the daughter of Joshuah and Elizabeth Dillon of Springfield. Three children were born to this union, one son Arthur, who died at the age of eleven months, and two daughters, Mrs. T. E. Branch, Milwaukee, Wis., and Mrs. E. M. Hart, Vermilion, South Dakota.

EXCERPT FROM MY PERSONAL DIARY

By Nellie M. Hart, Vermilion, South Dakota

It seems to me my father, Samuel B. McGlumphy, grew more active and remarkable as the years wore on. He always spoke of himself as young, and at the last he was indeed "seventy-nine years young." He had a wonderful philosophy of life, that religion should be abstract and not concrete, was his idea. Why creeds, when each man had his own religion in his soul. And as to the future, "just as there had been hands waiting to receive us when he came, unknowing, so as we left, unknowing, still, would there be hands to receive us!"

He had said for several years, if he could live to go back to Rush for the 50th anniversary and live to celebrate his own 50th wedding anniversary, then he would be ready to go. He did live to realize both grants. Neither he nor my mother ever lost their personal pride and extreme fastidiousness in dress, and they indeed were always perfectly groomed. But they took most particular pains for this trip to Chicago. My father graduated with the first class from Rush Medical College of which Dr. Daniel Brainard was the founder and first president. Doctor Brainard died of cholera the following autumn after the graduation of this first class.

In looking up the original, or rather first alumni, they wrote to my father for personal remembrances of Dr. Brainard. My sister said he gave a very wonderful ovation.

My father, of course, did not know whether any of his classmates were still living, so you can imagine his surprise and delight when, at the banquet, the toastmaster (by whom my father had purposely been seated) arose and said "well, you know I never was much of an orator but now here by me is my old room-mate, classmate and chum. He is a *natural born* extemporaneous speaker, my dear old friend, *Doc. Sam.*" Needless to say, with his ready wit and "gift o' gab" my father was equal to the occasion! I think the toastmaster's name was Haskins and he was the physician from some Indiana Railroad.

SKETCHES OF THREE PIONEER PHYSICIANS OF DAKOTA TERRITORY

DR. HENRY WALDO COE*

Dr. Henry Waldo Coe, who several years ago removed to Portland, Oregon, was born at Wau-pun, Wisconsin, November 4, 1857, but spent his boyhood days at Morristown, Minnesota, where his parents moved when he was five years old. He graduated from the village high school and took his collegiate course at the University of Minnesota. He studied medicine with his father, Dr. Samuel Buel Coe, whose American ancestry dates to Robert Coe who landed on Pilgrim Rock, 1634. The history of the family is given under the title "Robert Coe, Puritan," found in most biographical libraries.

The subject of this sketch began his medical college course at the University of Michigan and graduated at Long Island College Hospital in 1880, going directly to Mandan, then a village of Dakota territory. He was the first physician to settle in North Dakota west of the Missouri.

Dr. Coe had all the local medical appointments and was Northern Pacific Railway surgeon. In 1890 he was elected President of the State Medical Association. He was a member of the last territorial legislature. He was the first member of the legislature from west of the Missouri river in North Dakota, and like most of the doctors in that day was Mayor of his city in due course.

Dr. Coe moved to Portland, Oregon, in 1891, where he made a success of medicine, and prospered in various side lines such as farming, mining, banking, etc. After the year 1894 he confined his professional work to nervous and mental diseases, owning and operating Morningside Hospital, an institution where for over twenty years he cared for the insane of Alaska, for the United States government.

In 1893 he established at Portland the "Medical Sentinel" which maintained a high position as an independent magazine during the subsequent thirty years.

It was in Dakota in 1884 that he met Theodore Roosevelt and formed a friendship which lasted until the death of the Colonel. This Dakota acquaintance was largely had at Mandan, where Roosevelt went frequently to hunt wolves on horseback, on which occasions a pair of hounds owned by Dr. Coe usually had a prominent part. Twice only did he see the Colonel at Little Missouri, now Medora. Once it was a casual first

meeting there. The second time was in 1903. The President had asked Dr. Coe to come from Portland and meet him in North Dakota and accompany him on his special car into Montana, at which time Medora turned out, every man, woman and child to greet him. The President said to the assembled audience: "I am not going to make a speech, but I want to shake hands with every person here, old and young. It may be a long time before Medora will have another President."

As he prospered Doctor Coe made many benefactions. One of these was "Roosevelt, The Rough Rider," a bronze, heroic, equestrian statue, dedicated to the children of America by President Harding, the ground being first broken by Vice President Calvin Coolidge. This has been made in duplicate. One has been unveiled at Portland, Oregon. The other was for the State where those two men first met, North Dakota, and was placed at Minot. He gave the bronze for the Sacajawea monument at Portland, and plans were made for additional bronzes of Washington and Lincoln, hoping that they make better and more patriotic the youth of today and for the centuries that such bronzes may stand.

DR. JOHN KNOX KUTNEWSKY

Born April 20, 1858, in Groveland, Tazewell County, Illinois, Dr. Kutnewsky was educated in the public schools of that city, the University of Illinois, and is a graduate of Rush Medical College in 1882.

His father was one of the pioneer settlers and business men of Spink County and in 1883 became the operator of the first mill at Redfield, S. D.

On May 4, 1882, at Athens, Illinois, he was married to Miss Etta Kincaid. One son, Walter Knox, and one daughter, Edna, complete his family.

After graduation, he returned to Groveland and practiced medicine until 1884, when he felt the call of the wild and followed his parents to Redfield, Dakota Territory, where he practiced medicine. Licensed in Dakota Territory June 27, 1885, license number 34. He joined the Dakota Medical Society at Aberdeen during the fourth session, May 27, 1885. October 5, 1901, he was appointed Superintendent of the State School and Home for the Feeble-Minded at Redfield, which position he held until February 1,

*Extracted from Dr. J. Grassick's North Dakota Medicine published by N. D. Medical Association, 1926.

1923. He was a close student of modern methods of teaching and caring for this unfortunate class and introduced new and improved ideas, making this institution a creditable one to the humanitarian spirit which prompted its founding.

He has always been active in political and civic affairs. He has been local surgeon for the Chicago and Northwestern Railway since 1885; was surgeon of the First Dakota Regiment at its organization and occupied the position until the year of statehood in 1889. He has been alderman for many years in the city of Redfield and has served several terms as a member of the school board. He is a well known member of various fraternal organizations and active in all of them. He sought and obtained recognition in Redfield Lodge No. 34, December 1, 1885; made a Fellow Craft December 16, 1885; Raised January 26, 1886; serving in every office in the Lodge and becoming Worshipful Master in 1890. He was elected again in 1901-5-6-8-9, and in 1913 was appointed Grand Marshal of the Grand Lodge, which was the only Grand Lodge office he held until 1922 when he was made Junior Grand Warden, advancing to Senior Grand Warden in 1923, Deputy Grand Master 1924 and Grand Master in 1925. 1925 was a very busy year with the work of the office and laying corner stones of Temples, educational institutions and churches and dedicating new Temples.

He received the Capitular degrees in Redfield Chapter No. 20, July 16, 1888, and served in nearly every office of the Chapter; elected High Priest in 1890, and again in 1893-4-5-6. His first office in the Grand Chapter was the appointment as Grand Master of the First Vail in 1899. In 1900 he was made Grand Principal Sojourner; Grand Captain of the Host in 1901; Grand Scribe in 1902; Grand King in 1903; Deputy Grand High Priest in 1904; M. E. Grand High Priest in 1905. He received the Cryptic degrees in Huron Council No. 5 April 16, 1917.

The vows of Christian Knighthood were assumed in Huston Commandery No. 22 at Redfield, South Dakota, June 3, 1909, and he served through its several chairs, becoming its Commander in 1915.

He became a member of Yelduz Temple A. A. O. N. M. Shrine October 11, 1912.

Doctor Kutnewsky represents the Grand Lodge of Missouri near the Grand Lodge of South Dakota; and also represents the Grand Chapter of Massachusetts near the Grand Chapter of South Dakota.

He has ever reached out a helping hand to the unfortunate and is ever looking forward that his

life's work may be a greater usefulness and benefit to his fellowman. The course which he followed in his official connection with the School for the Feeble-Minded won high encomiums, and many methods that he used were adopted by other institutions of similar character.

The above brief sketch is not yet complete as Doctor Kutnewsky is still active in the practice of medicine and is endeared in the hearts of his fellow citizens and the medical fraternity of South Dakota.

DR. HENRY M. WHEELER*

Dr. H. M. Wheeler was born in New Hampshire, June 23, 1853. His parents, Mason and Hulda Wheeler, were natives of Vermont and of New Hampshire respectively, and when the subject of this sketch was two years old they moved to Northfield, Minnesota, and there resided during their remaining years.

Dr. Wheeler received his academic training at Carleton College, Northfield, and then began the study of medicine as was customary in those days with a preceptor, Dr. C. W. Thompson. He entered the University of Michigan in 1875 and graduated in 1877, beginning the practice of medicine at Northfield, Minnesota, the same year. In 1879 he entered the College of Physicians and Surgeons of New York City and graduated in 1880, after which he located at Grand Forks, North Dakota, at which place he continued to practice until May, 1923, when he retired from active work.

It was in 1876, when he was a student of medicine and at home during a vacation, that he rendered such important services in repelling the attack of the James and the Younger brothers on the First National Bank at Northfield, Minnesota. The details of this are written in the History of Minnesota. Dr. Wheeler took an active part in organizing the profession in this State. He was secretary of the State Board of Medical Examiners from 1894 to 1911, when he was succeeded by a professional associate, Dr. George M. Williamson.

In 1887 he was admitted to membership in the Dakota Medical Society, at Huron. This was before our North Dakota Medical Society was organized. When the latter became an entity he took an active part in its affairs and was honored by being elected its President in 1895. He was surgeon for the Northern Pacific Railway and the Great Northern Railway. He served for two consecutive terms as Mayor of Grand Forks City

*Extracted from Dr. J. Grassick's North Dakota Medicine, published by N. D. Medical Association, 1926.

and had always taken an active interest in municipal affairs.

Dr. Wheeler was one of the old guard who came to the State in the early eighties to do pioneer work. He was one of the first to have vision of the benefits that might come from group medicine that has lately taken such a hold on the profession. Shortly arriving in Grand Forks he was associated with Dr. Collins under the firm name Wheeler and Collins. Later Wheeler and Logan was the firm name, and still later Wheeler and Campbell. In 1905 another member was added and Wheeler, Campbell and Williamson were in copartnership. After the World War, Dr. A. C. Dean was added, and when he retired from the firm Dr. Benwell took his place and another, Dr. Ruth Mahon, was added. The group has always maintained a high professional standing and has

held the confidence of a continually increasing clientele.

Dr. Wheeler was an enthusiastic sportsman, and the hunting grounds of North Dakota and northern Minnesota afforded him relaxation and pleasure on many an occasion. Probably no man in the State had bagged more game than he.

He was an individualist in the sense that he had no duplicate. There was only one Dr. Wheeler. He had a strong personality and an active, inquiring, analytical mind. Beneath the rugged exterior throbbed a heart in compassion and sympathy with ailing and erring humanity. Our frailties die with the body, but our virtues live on forever, and by these we measure the man. Dr. Wheeler's name will endure. Dr. Wheeler died in 1930, leaving a widow and a son, Henry M., Junior.

THE STATE HOSPITAL FOR THE INSANE

Jamestown, N. D.

DR. J. D. CARR, SUP'T.

The State Hospital for the Insane at Jamestown, N. D., was opened May 1, 1885. Its construction and organization was authorized by an act of the Dakota Territorial Legislature passed in 1883, which provided for its location within a distance of four miles from the city of Jamestown. Upon the division of the Territory, and the admission of North Dakota into the Union, the Hospital was taken over by North Dakota, with its share of the land grant provided by Congress. Since that time the institution has grown year by year, keeping pace with the increasing population, and now occupies 2,000 acres of land. The institution was opened in 1885 with Dr. O. W. Archibald as Chief Executive, and his successors have been Drs. D. S. Moore, L. B. Baldwin, R. B. McAllister, W. M. Hotchkiss, A. W. Guest, and the present Superintendent, Dr. J. D. Carr. The institution is under the control of the State Board of Administration, which has jurisdiction over all penal, charitable and educational institutions under state supervision and control.

The hospital is located on a bluff facing the James River and extending south and west into Homer Township. The site is particularly desirable because of the fact that excellent drainage

is obtainable and sewage disposal facilitated. Nineteen large brick ward and administration buildings form the principal part of the equipment, and these, with the usual farm and out buildings, cover some fifty acres of ground. The entire plant is considered one of the most modern of its kind in the country. The rehabilitation and turning back into society of more than 50 per cent of the number admitted during the past year, reflects the high character and efficiency of the medical work being accomplished.

The Hospital is maintained by a direct charge of \$26.00 per month against the State at large for non-resident cases, and against the counties for those cases who are legal residents of the county from which they have been committed.

The medical staff consists of Superintendent Carr and five assistant physicians, one of whom is a woman. The medical work, and the general care and treatment of patients, conforms to the procedures recommended by the American Psychiatric Association. There are two hundred employees. There are, at present, 915 male and 620 female, or a total of 1,535 patients now in the hospital.

YANKTON STATE HOSPITAL

Yankton, S. D.

DR. G. S. ADAMS, SUP'T.

The site for an asylum was selected by the Governor on September 24, 1878. It was about 1000 feet southeast of the present main building of the hospital. When the legislative assembly convened in January, 1879, the Governor made a detailed report to that body, stating all the incidents that had compelled him to provide a temporary refuge for the insane of the Territory. He had expended \$2,286.85 from his personal funds. The Legislature accepted the structure as the hospital for the insane of the Territory; provided funds for its completion and furnishing and for its maintenance for the succeeding two years; reimbursed the Governor for his outlay, and enacted a statute for the government of the institution. This was the foundation of the first public institution in the Territory of Dakota.

The site of the hospital having been selected on government land reserved for school purposes, Congress transferred the section to the Territory for insane hospital purposes, and gave the Territory the privilege of selecting a similar body of land from the unoccupied and unappropriated public lands, as an indemnity grant.

The hospital was opened for the reception of patients on the 11th of April, 1879. Dr. J. K. Rainey, of Illinois, was elected Superintendent by the Board of Trustees, which consisted of Rev. Joseph Ward, Josiah R. Sanborn, and Alexander Hughes. Nine men and eight women were admitted to the hospital by transfer from the institutions of Minnesota and Nebraska.

Dr. Rainey resigned within a month after his appointment and Dr. S. B. McGlumphy, of Nebraska, was elected to the place. There were admitted from the counties during the period ending Nov. 30, 1880, 22 males and 9 female patients.

The Legislature of 1881 authorized an issue of \$40,000.00 of territorial bonds for the purpose of constructing a substantial hospital building in place of the unsuitable and dangerous wooden structure. The law provided that the new hospital be enclosed by the following November but the great amount of snow during the winter 1880-1881 and an unprecedented flood in the spring greatly delayed the commencement of the work. Before the new building was completed fire broke out in the original building, and it was burned to the ground. Five of the patients lost their lives, and nearly all the contents of the structure, both public and private, were destroyed.

Fortunately the construction of the new building was so far completed as to afford shelter to about 70 of the patients who had been kept in the frame building. The new building was entirely completed and furnished the following summer, and now forms one section of the east wing of the main building; its area is 36 feet by 126 feet. The center or administration building was begun at this time, but remained unfinished until the ensuing Legislature provided funds for its completion. The hospital so far built was heated with stoves and lighted with kerosene.

Dr. McGlumphy served as Superintendent until 1885. In the meantime the death of Governor Howard occurred, and thereafter the affairs of the hospital appear to have been administered solely for political purposes. New Governors, new Boards of Trustees, new superintendents followed one another in frequent succession. During the remaining five years of the territorial government, 1885 to 1889, inclusive, Dakota Territory had three Governors, and the hospital five different Boards of Trustees and six superintendents.

The Territorial Legislature in 1871 enacted laws prescribing the method of adjudging an individual insane and committing him to the institution at St. Peter, Minnesota, where our insane were being cared for, which followed the example of our eastern neighbors in their provisions. These laws remain on the statute books to this day practically unchanged.

In this law they followed very closely the method of our nearest neighbor. In its workings it has always been reasonably satisfactory, and no material changes or additions to it had been made,



nor any other method or commitment provided until the legislative session of 1915, when a law was enacted providing that patients might be admitted voluntarily upon their submitting themselves to the institution and its discipline.

In 1889 the material assets consisted of 640 acres of choice farming land, a substantial brick structure built on the linear or Kirkbride plan, containing an administration building and 12 wards, that could properly house 25 people each; a brick barn and other outbuildings necessary for their use, all possessed of an approximate value of \$250,000.

The most serious disadvantage arose from the fact that the place was ample for immediate needs. The people looked upon it as a finished institution, that needed no more money than was necessary for ordinary maintenance. It was difficult to overcome this delusion, the more so because times were hard and the early settlers were often sorely in need of the comforts of life themselves, and could ill afford to give much to public charities. The place filled to overflowing; crowding began; two beds were placed where only one should be; but no heed was given to the plea for more room. It required a catastrophe to arouse people to an appreciation of the true condition, and the catastrophe came.

On February 12, 1899, at about 1 o'clock A. M., the occupants of a building built and used for a laundry were aroused by the appearance of a dense smoke. An alarm of fire was immediately given and all made an effort to escape. Although built for a laundry, the upper stories of the building had been made use of to accommodate the overflow, both of patients and attendants, and there were in the building at the time 45 women patients and 12 women attendants. Almost at once they were overcome by the thick dense smoke, and of the whole number, but one, an attendant, escaped with anything more than her night apparel, and 17, whose rooms had not been unlocked, or who had become confused, perished in the flames. Efforts to fight the fire were made futile by the fact that the pipe conveying steam to the fire pump passed through the room where the fire originated, and was immediately broken. The building was consumed with incredible rapidity; within twenty minutes after the alarm the floor fell in. The fire originated in the laundry dry room, and the burning cotton goods almost immediately filled the whole space with a smoke, overwhelming, both in its volume and density. Fortunately, the Legislature was then in session and the hospital was being visited by a legislative committee. The committee returned

to the State capitol, with the assurance to their colleagues that the fault lay in legislative neglect, and that further disregard of the institution's crying needs would be an invitation to a similar disaster in the future. Before adjournment the Legislature appropriated money, not only to rebuild the burned structure, but also to build a new rear center building, a new power house, and laundry. It is an impressive fact that from that day to this no Legislature has adjourned without having first appropriated money for the purpose of building at the State Hospital, substantially in the amounts and for the purposes asked, and it is confidently believed that in no building since built is human life jeopardized by fire.

In accordance with the recommendations of the Superintendent, the Legislature of 1911, enacted laws requiring fireproof buildings and defining fireproof structures, and also prescribing the smallest area of floor space to a patient, and the minimum per capita amount of air in apartments where insane persons are kept or lodged.

In addition to the old original main brick building, the east wing of which is occupied by men and the west wing by women, there are four separate buildings now occupied by the woman's group, and five buildings in the men's division, with a sixth building provided for. Work on this building will begin shortly after the first of July.

Besides these buildings for the accommodation of patients, there are the Rear Center Building, Power House, Laundry, and Industrial Building, in addition to the necessary barns and out-buildings.

The Hospital now owns about seventeen hundred acres of land, fourteen hundred and fifty of which are under cultivation. The Hospital also owns twenty-five acres of heavily wooded land on the James River, about five miles north and east of the institution. There has been provided a pavilion, having accommodations for twenty-eight patients with the necessary attendants, cooks, and caretakers. During the summer months, from June to September, alternating groups of men and women patients are taken to the Park for a ten days' outing.

The Institution has, through its Amusement Fund and without cost to the State, been collecting original water colors for over twenty years. There are at the present time 232 water colors in the collection, as well as 17 oils and 35 beautiful etchings. These paintings add very much to the decoration and attractiveness of the buildings.

The valuation of the hospital property at the present time, as carried on the inventory, is \$1,-

581,033.56. The census at this time (April 28, 1931) is 837 men, 646 women, or a total of 1,483 patients. Employees number 228.

There are no private institutions for the care of the insane in the state of South Dakota, and no patients are kept in jails or alms-houses. All the facts in regard to the insane are, on that account, matters of record at the State Hospital at Yankton.

The ratio of the insane to the sane population

at the beginning of our history was, as is the case in all newer communities, relatively low. As late as 1890 it was as low as 1 to each 1,250, and it has gradually increased until at the present time the ratio of the insane to the sane population is as 1 to 500. At the present time there is little spare room for the accommodation of the insane, and work now under way will provide another building for the accommodation of 120 more inmates, probably by July 1, 1932.

INSTITUTION FOR FEEBLE-MINDED

Grafton, North Dakota

DR. A. R. T. WYLIE, Superintendent

A bill locating the North Dakota State Institution for Feeble-Minded at Grafton was passed in 1901. The same year, a bill creating a Board of Trustees and authorizing the erection of a building was also passed. The Board proceeded to secure plans and erected the main building.

Dr. L. B. Baldwin was elected Superintendent, and May 2, 1904, the Institution was opened and forty-nine mental defectives admitted. The following year, 120 acres of land were bought and this, with the original forty-one acres still constitute the Institution farm. In April, 1907, Dr. Baldwin resigned and Dr. H. A. LaMoure was appointed Superintendent. During his term, the boiler house and hospital were erected and the west wing enlarged. The Institution was also equipped with an electric light plant, water tower and fire pump.

In December, 1910, Dr. A. R. T. Wylie, the present Superintendent, was appointed to succeed Dr. LaMoure. When Dr. Wylie took charge, the population numbered 165, today we have a total of 685. In July, 1911, the control of the Institution was taken over by the Board of Control. Since 1910, two large dormitories for boys, one for girls, a farm house, refectory, and cold stor-

age, a garden house, and dairy barns have been built as well as an addition to the laundry. A fire escape, an x-ray apparatus, and a refrigerating apparatus have been installed. We now have a well organized school department with an enrollment of 210 and nine teachers employed. Regular grade work, industrial arts, manual training, vocal and orchestral music are taught. We own 140 acres of land, rent 1050 acres. We aim to make our farm produce the milk supply, the fresh pork, potatoes, and vegetables.

Our medical staff is composed of the superintendent, two assisting physicians and a trained nurse.

One of the late statutes provides that we receive cases for observation. During the last two years, we have received twenty-eight, and were enabled after close study to recommend their placement. In this way, we feel we have been of real service to the State.

This is a growing Institution in every sense of the word, and if the superintendent is permitted to see his visions fulfilled, it will be one of the leading institutions of its kind in the United States.

AN OUTLINE OF THE HISTORY OF PUBLIC HEALTH IN NORTH DAKOTA

By DR. A. A. WHITTEMORE
Bismarck, North Dakota

North Dakota is too young a state, and at this time too thinly peopled with a preponderant rural population to afford anything of a startling nature for a public health history. The subject naturally divides itself into four epoch periods.

The first public health laws were passed by Dakota Territory in 1862, under Dr. William Jayne, first Governor of Dakota, a personal friend of President Lincoln. They were termed "Crimes against public health and sanitation." These laws were very simple and did not provide for a board of health or health officer.

About this time occurred the smallpox epidemics of this period, which practically wiped several Indian tribes out of existence.

1886 marks the second epoch. A part time health system was adopted with state and local boards. The duties of the State Board required the administrative control of live stock sanitation, pure food administration, the licensing of physicians and embalmers, the appointment of two members of local health boards (the State's Attorneys were ex officio presidents), and the general public health supervision of the State.

The first Territorial Board of Health consisted of Attorney General George Rice, President, ex officio, C. W. Cummings, M. D., Fargo, Vice President, and E. M. Darrow, M. D., Fargo, as Secretary and Executive Officer. The first meeting was held at Bismarck, April 22, 1885, Dr. Cummings being absent. The second meeting occurred at Fargo, May 7, 1885. A survey of the medical practitioners was attempted, local boards were organized, state institutions were visited and rules and regulations promulgated.

The first board of medical examiners appointed by the health board were: L. N. Wear, M. D., Fargo, M. F. Crane, M. D., Fargo. They with the Secretary, Dr. Darrow, issued licenses to over 400 physicians during the first year. W. C. Langdon, V. S., was appointed State Veterinarian. He issued a very comprehensive report.

In reading the old laws of this period, one's attention is at once drawn to the emphasis placed on live stock sanitation and maritime quarantine. Many of these laws are still in force and may be again of value if contemplated improvement of navigable rivers is ever undertaken.

In 1889, Dakota Territory was divided into two states, North and South Dakota. New health laws were passed by the first legislature, which adjourned March 6, 1890. Many changes were made with some improvements. The first State Board of Health consisted of G. F. Goodwin, Attorney General, as President, ex officio, M. O. Teigen, M. D., Fargo, Vice President, and J. G. Millsbaugh, M. D., Park River, as Secretary and Executive Officer. The new law of 1890 divorced from public health administration the licensing of physicians, live stock sanitation, and the appointment of county health boards, but as it did not come into effect until July 1, Drs. N. H. Hamilton and G. W. Glaspel, both of Grafton, were appointed to the medical examining board.

In 1894, a very advanced and ambitious health project was successfully undertaken. Dr. F. H. Devaux, Secretary of the State Board of Health, at that time undertook the local manufacture of smallpox vaccine at Valley City, his home town. Thirty thousand doses were produced and dispensed free to physicians during the first year. Dr. DeVaux states in his report that this is the first instance in history of a state, through its official board of health, attempting such an undertaking. The station was discontinued after one year because of lack of financial support by the state legislature.

Because of a severe typhoid fever epidemic, known locally as "Red River fever," extending throughout the Red River valley, caused by the river overflowing its banks, generally contaminating the water supply, the city of Grand Forks constructed the first filtration system in the State.

The next step of an epochal nature was taken by the 1923 legislature when a full-time state department of health was created, under which we are now working, consisting of a state public health advisory council, a state health officer and directors for four working divisions. The first advisory council was composed of Fannie Dunn Quain, M. D., Bismarck, as President, J. Grassick, M. D., Grand Forks, Vice President; Arne Oftedal, M. D., Fargo; R. S. Towne, D. D. S., Bismarck, and Miss Minnie J. Nielson, State Superintendent of Public Instruction, Bismarck. A. A. Whittemore, M. D., of Bowman, was

appointed first full time state health officer. A full personnel and bureau heads were not completed until 1926; the state owes this advance to the able leadership of H. E. French, M. D., of the University at Grand Forks, then Secretary of the State Board of Health.

The first vital statistics law was passed in 1885, requiring the coroner to report births, deaths, and marriages to the State Commissioner of Immigration. This law was amended in 1893, requiring reports to be made by the attendant to the County Health Officer and by him to the State Health Officer. In 1907, the model standard vital statistics law was passed, adopting the township system, and this is the law under which we are now working. North Dakota was admitted to

the United States Registration Area for Births and Deaths in 1924. The first statistical tabulations for the Department were attempted in 1902, by Dr. H. H. Healy, Grand Forks, State Superintendent of Health.

The photographs accompanying this article mark four distinct epochs in the development of the State Department of Health in North Dakota:

1. William Jayne, M. D., First Territorial Governor.
2. E. M. Darrow, M. D., First Territorial Health Officer.
3. J. G. Millsbaugh, M. D., First State Health Officer.
4. A. A. Whittemore, M. D., First full time State Health Officer.

STATE SCHOOL AND HOME FOR THE FEEBLE-MINDED

DR. SUPERINTENDENT F. V. WILLHITE
Redfield, South Dakota

The State School and Home for the Feeble-Minded is devoted to the treatment, care and training of those who are mentally deficient. Some five hundred and fifty patients are now receiving such care.

In addition to the various ward buildings required, the institution maintains a forty bed hospital completed in 1928, for the treatment of the many medical and surgical conditions that develop. The hospital is completely equipped with major and minor operating rooms, x-ray, laboratory facilities, and dental offices. All those admitted are given thorough physical and mental examinations and classified accordingly.

A very large percentage of all admissions are within the first two decades of life. Therefore the institution maintains a school with teachers especially trained for the work. Into this school

go all of those who by reason of mental deficiency have been unable to do the work of the public schools or to make adequate social adjustments. The training here given does not always follow the lines laid down by the public schools but has the same end in view, viz., to prepare the individual to be a happy and useful citizen in his community.

A number of supplementary activities are engaged in, such as farming, gardening, and dairying. Eight hundred and sixty-five acres are farmed, seventy-five to one hundred acres of gardens. One of America's outstanding dairy herds is to be found here. These activities are made use of in providing useful training for those who are placed here.

An extensive building program has been accomplished during the past eight years. Six new buildings have been erected and three have been practically rebuilt, as well as a number of minor structures. These have been built by the institution without contract, resulting in a considerable saving in the cost of their construction and providing much useful employment for the patient.

In the final analysis, however, the fundamental purposes of the institution are two, all others are subservient thereto; first, to restore the individual to competency if possible and give him such training as he is capable of receiving, and secondly, to protect society against his social inadequacy.



SOUTH DAKOTA STATE SANATORIUM FOR TUBERCULOSIS

Sanator, South Dakota
DR. R. E. WOODWORTH, SUPERINTENDENT

This Sanatorium was authorized by act of the Legislature in 1909. It is located five miles south of the City of Custer, at an altitude of 5,340 feet above sea level. The site was selected by the Board of Charities and Corrections after a careful investigation of numerous sites. That the location was well chosen, has been proven without question. Situated as it is in the heart of the Harney Peak Forest Reserve, it not only furnishes



climatic conditions that are almost ideal owing to the elevation, but in addition, a charming variety of scenery that is a constant source of pleasure.

The grounds comprise an area of 170.89 acres, which were acquired at a cost of \$4,000.00, and upon which buildings have been erected at a cost of \$409,000.00, to the State. One ward, known as the Legion Pavilion, valued at \$40,000.00, was presented to the State by the American Legion and Auxiliary Bodies.

The first building erected for patients was of frame cottage construction and accommodated fourteen patients. It was opened in April, 1911. Since that time, four wards have been added in addition to the Legion Ward and are of frame and stucco construction, each ward comprising twenty-four rooms with two beds to each room.

There have also been added from time to time since 1918, buildings as follows: a Nurses' Home, Power House, Laundry buildings, School House, Steward's Cottage, and a dwelling for the Assistant Superintendent. A residence for the Superintendent was erected among the first buildings. The wooden buildings were made over into cottages for some of the employees, a garage, carpenter shop, etc.

Four hundred and fifty-two patients were cared for at this institution during the past biennial period. Of this number, one hundred and fourteen were discharged as arrested cases; fifty-seven very much improved; twenty-nine unchanged, and seventy-one deaths. The remaining one hundred and eighty-one are continuing their treatment here. While the original intent was to admit only incipient cases of pulmonary tuberculosis, in the interest of public health this rule has been modified. Minimal and moderately advanced cases are given the preference, but when room is available, old and far advanced cases are admitted when they are a constant menace to their family and to the community in which they live, thus lessening the danger of infection by practically putting such cases in quarantine. This policy has been necessary on account of the fact that this is the only institution of its kind in the State.

It is the aim of those in control to so conduct affairs that an air of hopefulness and cheerfulness shall pervade the institution, so that a feeling of contentment will prevail among the patients.

A study of the records of this Sanatorium and the showing of the decided decrease in the disease in the State since its establishment, indicate conclusively that it has filled a real need and that it should be regarded as a permanent and necessary institution, paying dividends in health and happiness to those committed to its care.

THE SCHOOL OF MEDICINE OF THE UNIVERSITY OF SOUTH DAKOTA

Vermilion, S. D.
By DR. G. R. ALBERTSON, DEAN

The School of Medicine was established and began work in the fall of 1907 under the able management of its first Dean, Christian Peter Lommen, who, with the advice and consistent

friendship of Doctors F. A. Spafford and Thomas Cruickshank, outlined its curriculum and placed its standards on that high level of attainment that have characterized the entire history of the in-

stitution. In 1907, Dr. F. A. Spafford was a member of the Regents of Education and to his death was a sincere friend, not of the Medical School alone but of the entire University.

While the fall of 1907 is the date of the official opening of the School of Medicine, its introduction on the campus was the result of a gradual growth. During the preceding years several of the courses given in the first two years of all medical schools had been given at the University of South Dakota and it was necessary to add only certain other courses to qualify as a two year medical school. For several years preceding 1907 students from our University had been admitted to such institutions as Rush and the Medical School of Northwestern University with advanced standing in chemistry, histology, and embryology.

The faculty of the School of Medicine consisted of Dr. C. P. Lommen, dean and professor of histology and embryology, Dr. A. N. Cook, professor of chemistry, A. L. Haines, instructor of chemistry, Dr. H. E. French, professor of anatomy and physiology, Dr. O. O. Stoland, instructor of physiology, Dr. Thomas Cruickshank, lecturer in materia medica, and Dr. Mortimer Herzberg, professor of pathology and bacteriology and director of the State Health Laboratory.

Christian Peter Lommen, until his death on July 8, 1926, faithfully and efficiently served the

school as its dean and professor of histology and embryology. Under his supervision it developed and prospered and its work became recognized by all of the medical schools of the United States. The school has been examined by both the Association of American Medical Colleges and the American Medical Association and placed in class "A" by these bodies. Upon the death of Dean Lommen, Dr. G. R. Albertson took over his work which he has continued to the present time. Dr. Albertson first became connected with the School in 1912 as professor of anatomy.

To keep abreast of the modern trends in medical education, courses in physical diagnosis, obstetrics, surgery, and medicine have been added to the curriculum since the beginning of the school. The class work is held in commodious quarters in Science Hall and in the Chemistry Building and for the past several years capacity classes have been in attendance.

While only the first two years of medical work is, at present, being conducted in South Dakota, our students effect a saving of nearly fifteen thousand dollars a year from the average cost of medical education for these two years, and it is hoped that in the not too distant future the full four year course of medicine may be instituted in South Dakota.

STATE HEALTH LABORATORY

Vermilion, S. D.

BY DR. J. C. OHLMACHER, DIRECTOR

The State Health Laboratory at Vermilion, South Dakota, was created by an act of the State Legislature in 1909. This act provided that the bacteriological laboratory of the School of Medicine of the State University should perform the function of carrying on tests designated by the State Board of Health as well as a laboratory of instruction for the medical and arts students of the university. The professor of bacteriology and pathology of the School of Medicine was made director. The creating of the State Health Laboratory was made possible by the efforts of the late C. P. Lommen, then Dean of the School of Medicine and the late Dr. F. A. Spafford, then a member of the Board of Regents. The laboratory began to function as an agency of the State Board of Health in September, 1909. It was first housed in Science Hall where were situated

the various departments of the School of Medicine. On completion of the new chemistry building, it, with the department of Bacteriology and Pathology were moved to the east half of the third floor of this new building which, in conjunction with the teaching laboratories, it has occupied ever since. The first director of this laboratory was Dr. Mortimer Herzberg, who resigned his position in July, 1918, to accept the duties as pathologist at the St. Joseph Mercy Hospital, Sioux City, Iowa. The present director, Dr. J. C. Ohlmacher, was elected to the position and began his duties in October, 1918.

From the very beginning the laboratory encountered many difficulties, but under the excellent management of Dr. Herzberg, who had the moral support of Dean Lommen and Dr. Spafford upon whom to rely, it began to become

more and more widely known and an increasing number of South Dakota physicians patronized it. From its beginning up to the present time such materials as are of direct interest to public health activities, were examined free of charge with the exception of the Wassermann test for syphilis and analyses of smears for gonococci. In March, 1918, the State Board of Health made syphilis and gonorrhea reportable and quarantinable diseases. Tests for these diseases were then put on the free list. The preparation and free distribution of antityphoid vaccine has been a part of the State Health Laboratory's activities from the first, though it has never been considered practical from the economic standpoint to extend this type of service to include other products of a similar nature.

In 1919 many thousand tests were carried on with the specimens of blood sent in for the Wassermann test. Various recognized methods were employed. Eventually, on the basis of the results thus obtained, the laboratory adopted a new modified procedure which has proven of much value in that it has been found to be extremely accurate and is so simplified as to best meet the needs of this laboratory. In 1926 the Kahn flocculation or precipitation test for syphilis was added as a check or control for the Wassermann test. The addition of this test, while greatly adding to the work, has proven of much value from the standpoint indicated above, and it is expected that it will continue to be employed until the future develops a more simple or otherwise better test.

In 1927 a form letter was sent to all the registered physicians of the State directing attention to the development of a few cases of tularemia and undulant fever within South Dakota. In this letter notice was given that the State Health Laboratory was prepared to coöperate in the study of all suspicious cases.

For the past four or five years extensive surveys of water supplies of South Dakota have been made by the State Sanitary Engineer. The State Health Laboratory assists in this matter by making bacteriological analyses of all waters sent in by many districts under direction of local health officers. This additional work, together with the fact that the Kahn test was added to the routine procedures, and that tissue examinations have materially increased, has greatly added to the amount of work done by the laboratory.

Practically every hospital and clinic in the state, and many physicians not directly connected with either hospitals or clinics, now send in biopsy material for examination. The laboratory under-

takes the routine examination of tissues for the St. Joseph and Methodist State Hospitals at Mitchell, and New Madison Hospital at Madison, South Dakota. All tissue analyses are made by the director, there being no other pathologist connected with the Institution.

The greatest annual appropriation ever received from the legislature was \$12,000. This was procured for only two years. For the past four years and for the two succeeding years ending in July, 1933, an appropriation of only \$10,000 was granted. Were it not for the additional funds afforded by laboratory fees the laboratory could not conduct the routine tests demanded by the State Board of Health. As it is the financial support of the laboratory, from all sources, is only large enough to pay the salaries of the employees and to conduct necessary routine analyses. It does not allow of expansion along lines indicated by present day needs and comparable to the activities of many laboratories in nearby states. That, despite niggardly support, the laboratory has conducted its routine duties in a commendable manner constitutes a source of pride to all interested in its activities.

The laboratory staff consists of the director who devotes half his time to teaching in the School of Medicine; and assistant director, who conducts much of the routine work of the laboratory, and devotes part of his time to teaching bacteriology; a technician who aids the assistant director and routinely conducts the Wassermann and Kahn tests, and prepares tissues for examination; a secretary who writes and sends out all reports, writes articles prepared for publication, looks after the records and does many other things too numerous to mention; and a general assistant who prepares and sends out outfits, looks after the store room, prepares culture media and washes dishes. No additions have been made to the staff under the present management except the addition of the student now carrying on special research, a thing made possible, as indicated before, by a fee of \$600, paid by the city of Vermilion for the weekly examination of milk.

A glance at the appended table will indicate how rapidly the work is increasing. The fact that under these conditions no additions have been made to the regular staff is significant. This should afford pleasure to many legislators and to certain taxpayers, though to those who have charge of the laboratory, to the Board of Health, to the Local Health Officers and the many physicians of the State interested in the advancement of public health within our borders, it speaks of unwise economy and appears inimical to those

interests which look forward to progression commensurate with the needs of this State.

TABLE I

September, 1909-July, 1912.....	Total	1,634	
July, 1912-July, 1914.....		3,185	
July, 1914-July, 1916.....		5,663	
July, 1916-July, 1918.....		5,228	
July, 1918-July, 1920.....	6,648		15,710 Total at time Dr. Herzberg resigned.
July, 1920-July, 1922.....	13,782		
July, 1922-July, 1924.....	17,871		
July, 1924-July, 1926.....	19,047		
July, 1926-July, 1928.....	21,835		
July, 1928-July, 1930.....	30,900		
		103,435 Total since 1918.	
Grand Total	125,793		

TABLE II

	July, 1926 to July, 1927	July, 1927 to July, 1928	July, 1926 to July, 1928	July, 1928 to July, 1929	July, 1929 to July, 1930	July, 1928 to July, 1930
	1 year	1 year	2 years	1 year	1 year	2 years
Sputum	730	706	1,436	695	696	1,391
Widal	555	518	1,073	485	516	1,001
Diph.	658	670	1,328	1,400	1,008	2,408
Water	361	334	695	274	618	890
Wass.	4,354	4,373	8,727	4,965	6,075	11,040
Kahn	1,772	4,316	6,088	4,791	5,834	10,625
Tissue	367	424	791	789	824	1,613
Misc.	792	905	1,697	919	1,013	1,932
Total.....	9,578	12,246	21,835	14,316	16,584	30,900
Sioux Falls Exams.			4,180			6,051
Total for 1928-30 period.....						36,951

THE SCHOOL OF MEDICINE OF THE UNIVERSITY OF NORTH DAKOTA

Grand Forks, North Dakota

DR. H. E. FRENCH, DEAN

North Dakota, coming into its development comparatively late, fairly well escaped the tendency, fostered by a variety of reasons, that produced in the United States and Canada in a little more than a century some 475 medical schools. It is said however, that in North Dakota there were at least two faint efforts to start a medical school prior to 1900. Neither of these movements got under way and they seem not to be listed in any publication.

With the growing realization, about the beginning of the present century, that medical education was chaotic, that it must be improved in both the qualifications of its students, and in its equipment and accomplishments. That it must be linked more closely in support and point of view with all other scientific work. In 1905, North Dakota was one of the states to organize a two year medical school as an integral part of its University.

From the start a very reasonable curriculum of premedical college work was outlined and advised. After the first few years a two years college curriculum soon to be crystallized all over the country, first as desirable and later as the minimum essential, was rigidly required for admission. From its inception it has always attempted to provide the necessary library, laboratory and instructional facilities, to do thorough work in the first two, or laboratory years of the complete medical curriculum. It has never attempted to

offer the larger clinical work that makes up the greater part of the last two years.

While its minimum requirements for admission remain the same, it has come about in the last several years that from seventy-five to eighty-five per cent of its matriculants enter with either three or four years of college work. In the same way while its number of students was very small at the start it has developed that the medical classes now contain about thirty each. In fact the facilities require that the school limit its classes to about thirty each. In so doing it seems able to provide for well qualified residents of the state and for but few others.

It has no affiliation with other medical schools, but so far at least it has been fortunate in that no students who have finished its curriculum have failed to gain admission with junior standing to some good clinical schools. In 1930 out of twenty-nine men, one transferred to Harvard, two to Vanderbilt, two to Pennsylvania, eleven to Rush, and two to Northwestern, with three others also accepted at the latter institution. The other members of the class are continuing their work at such schools as Nebraska, Colorado, Creighton, Washington University, Louisville, Temple, and Tufts. It is too early as yet to report on transfers for this year, but out of a class of about twenty-seven, fifteen have already been accepted. The schools involved are Johns Hopkins, Cornell, Rush, and Northwestern.

STATE TUBERCULOSIS SANATORIUM

San Haven, N. D.

DR. CHAS. MACLACHLAN, SUP'T.

In the North Dakota Tuberculosis Sanatorium at San Haven Post Office, two and a half miles from Dunseith, in Rolette County, the State has one of the important institutions intended to serve all the people of the State in its special line.

Situated on the crest of the southern border of the foot hills of the Turtle Mountains, at an altitude of 1,800 feet, it is one of the most attractive show places of the State, comprising 280 acres of rolling ground partially wooded with oak, poplar,

in 1911. Work was commenced on the grounds, administration building, and water supply in 1912.

The first patients were admitted in December, 1912. The State Board of Control assumed management of the institution in July, 1913. The Masonic, women's and nurses' cottages were opened in 1914. The Superintendent's home, refectory building and dairy barn were completed in 1916. The high pressure boiler, steam engine, and generator were installed in 1917 and 1918.



birch and elm; with a group of fine buildings arranged in a crescent, it overlooks a beautiful lake and a wide stretch of prairie 300 feet below.

The Sanatorium may be reached over state highways Nos. 3 and 5 and by the Great Northern Railway branch from York to Dunseith.

The buildings consist of a four story, two unit infirmary, refectory (which also houses the laundry and kitchen workers' dormitory), children's building (where a grade school is conducted), two men's and two women's cottages, new nurses' home, administration building, power plant, dairy, horse, chicken and goat barns.

The initial appropriation by the legislature was

The water and electric systems were extended in 1919. The east wing of the infirmary was opened in July, 1921. The power house was completed and furnished in 1927. The fine new infirmary addition was completed in 1928, and the new nurses' home during the winter of 1929.

Patients admitted must be residents of North Dakota. Patients must be certified as having tuberculosis by a registered practitioner, and if indigent, must be so certified by the County Judge. Personally paid maintenance is at the rate of \$1.43 per day, monthly in advance. Some 2,850 patients have been admitted since opening. The institution can care for 240 patients, and is now operating at capacity.

DR. FRED G. LUNDY OF DAKOTA TERRITORY

DR. RICHARD M. HEWITT

Rochester, Minnesota

Recently, perhaps due largely to the stimulus of Mark Sullivan, readers have come to realize that this country was making history in the final quarter of the last century. Many articles are appearing in which the text of documents of that period are being preserved, and the personalities of outstanding local figures are being explained. They are of interest now, and will be of value in years to come. Accordingly, this article is offered in the hope, by quotation, interpretation, and photography, of recording a bit of the life and times of Dr. Fred G. Lundy, a territorial physician of superior character.

One of Doctor Lundy's ancestors, an Englishman, settled in Bucks County, Pennsylvania, in 1676. From Pennsylvania the descendants of this settler scattered. Some went to the warm regions of Maryland and Virginia; others to regions noted for anything but warmth. Doctor Fred came of the latter group. Born in New Market, Ontario, June 24, 1861, he became a physician in Inkster, Dakota Territory, in 1885 and, in 1887, an organizer of the North Dakota Medical Society.

The foregoing facts and the impressions and facts to follow have been gleaned from the contents of an old valise and an older doctor's bag, formerly the property of Doctor Lundy. They were put into my hands by his son, Dr. John Lundy, of Rochester, Minnesota, widely known for his work in anesthesia. Supplementary information has been given me by this son and by Mrs. Lida Woods Lundy, the mother of Doctor John and the widow of Doctor Fred.

There is no need to tell most of those who will read this article of the conditions of life on the north central prairie in the eighties of the last century. Many can recall the struggle with the elements, and with men, of fifty years ago. The same blizzards, cyclones, and crashing storms fell on the plains then as now; the difference is that the territorial residents traveled in buggies and box sleds, and sometimes saw sod walls melt in the rain, on them and on what they possessed.

There was no Indian trouble about Inkster in Doctor Lundy's time, but there were white men on the plains, who had an eye for such horses as

the doctor drove. Doctor Lundy had, as companions on his calls, three huge dogs, who would be wakeful if he should doze at an inopportune time. Mrs. Lundy relates that, as the doctor jogged across the prairie, he could drop birds on the wing, armed only with a revolver, which he carried in a shoulder holster.

Into this environment, from which all of the hardships of earlier days had not disappeared, Doctor Lundy threw his body, training, mind, skill, and personality, all of which, judging from his personal records, diaries, and correspondence, must have been of a high order.

MEDICAL STUDENT

To a physician, the education which Doctor Lundy pursued in those days, when extended education was not a prerequisite to licensure, is impressive. His family has preserved his diploma in medicine from the University of Michigan, dated 1884, a similar diploma from Trinity College, Toronto, dated 1885, and his certificate of admission to the College of Physicians and Surgeons of Ontario, dated 1885. His certificate of licensure in the Territory of Dakota is dated 1885. Among the effects there is no certificate from the New York Polyclinic, but Doctor Lundy attended there in 1891.

While he was a student, he began the habit, which he followed all of his too short life, of keeping notes and records of his work, and to some extent of his views. The first notebook is dated 1881, and contains a "List of subjects to be read and textbooks available."* The list of subjects is followed by records of pages read, and dates on which the reading was performed.

This notebook, as all of them, is kept minutely in parts, sketchily in other parts, and many pages are blank. The one who kept them was no automaton. Apparently he would resolve to keep them up to date, but would lapse in spite of himself, then take a fresh resolve. Most medical students and physicians will recognize this alternation of

* For their historic value the textbooks are recorded here: "Descriptive Anatomy, Gray; Physiology and Histology, Kire, Sewell's Notes; Chemical Theory, Roscoe; Chemistry and Toxicology, Craft, Prescott; Materia Medica and Pharmacy, Garrod, Wood; Medical and Surgical Anatomy, Gray; Principles and Practice of Medicine and Therapeutics, Palmer, Flint, Horwitz; General Pathology, Green; Surgery, Ashhurst, Bryant; Surgery, operative, Ashhurst, Bryant; Midwifery, operative, Playfair, Lusk, Smith; Medical Jurisprudence, Husband, and Sanitary Science, Husband."

* From the Section on Publications, The Mayo Clinic.

laudable enterprise, with the extremely human relapse into merely doing what the working hours will allow.

In 1884, while he was attending the University of Michigan, the student had reached the bedside. On January 1, he wrote: "Holiday. Attended my patient (boy) in hospital morn. and eve. Skating on Huron River. Good sleighing." On January 6, is the first mention of his brother who later became a dentist in Inkster. The two were very close friends, as some brothers are not, lived together as students in Ann Arbor, and were in close touch always thereafter. Under February 1, 1884, appears the entry: "During whole months of Jan., I arose at 7¾ a. m. (average) and retired at 10½ p. m. (average). Consequently I slept 9¼ hours." On the following Sunday he wrote, "Reviewed my cash book up to date. In all day." On Wednesday, February 13, appears the following: "Last night, shirts were stolen from our line. Lost one new one, 14½. Cost 83½c." On May 18 he wrote: "In eve attended Baptist Church. Heard McVicar of Toronto preach." This minister was a relative of the late Dr. C. S. McVicar of The Mayo Clinic. On that same Sunday, he talked with two other students of forming a Canadian Society, and less than a week later twenty-six students met, and formed the Canadian Students' Association. After a committee had been appointed, of which F. G. Lundy was chairman, to draft a constitution and by-laws, the meeting adjourned. Those present dispersed after singing "God Save the Queen." This interest in organizations was characteristic of the man who was to become Doctor Lundy, as was his tendency to be a leader in them.

A notebook which he kept while he was at Ann Arbor, apparently well along in his course, contains odds and ends of information on drugs, treatment, diseases, pathology, history of medicine, and such quotations as the following: "Treat the patient rather than the disease." "In the study of natural truth we must consult experience, experience rather than reason." Da Vinci. 16th Cent." "Sharp observers study men and events as others study books." "Virtue is a thousand shields."

On June 26, Mr. Lundy received his diploma and degree of M. D. from the hands of President Angell, and two days later was in Sheffield, Ontario, where he "umpired a football match after tea."

PRACTITIONER

He lost no time in getting to work, for before the month was out he had apparently entered on a preceptorship or assistantship under Dr. J. W.

Smith, his brother-in-law, of Dundas, Ontario. "Dr. Smith," he wrote, "said he would be willing to give me board, washing, etc., and \$25.00 per month if I remained till spring or a year." A few days later Doctor Smith went to Toronto for instruments and brought back for his assistant a watch, pocket case, hypodermic case and fever thermometer.

Doctor Smith continued to be the adviser of his assistant, for in June, 1885, he wrote to Doctor Lundy, who had by that time settled in Inkster: "You ask proportions of fever mist. I never make a large bottle contain strong medicine for fear people may mistake dose or may keep on giving it after its usefulness is gone. I generally use:

"Rx. Tr. aconiti, m. xvi.

Spt. ether nitr., 5 iv. to 5 vi.

Liq. ammon. acet. ad, 5 ii.

S. zi in aq. p. rn.

"In this case they can only give 16 doses and if they do give too large a spoonful they will not do injury."

After eight pages of consultative advice, Doctor Smith continued, "I shall always be glad to go over any cases in this manner and give you my views on them, and whether directly beneficial or not will perhaps help you into wider fields of thought in this ever widening field of science."

Good for Doctor Smith. Apparently a mature man and a young man of like stamp had met, with mutual respect. I wish I could reproduce the pages of these notebooks as they stand. Of course, I cannot. Rather, I must give an incomplete idea of the type of practice this extraordinary physician conducted, as it illustrates the type of man he was, and the conditions under which he worked.

The citizens of Inkster seem soon to have realized that they had a good doctor. Doctor Lundy's notebook for 1887 indicates that he was actively engaged. It is a mixture of memoranda of a bachelor practitioner; for instance, "Board, \$4.00;" "Tim Curtain, setting fracture, etc., \$10.00;" "Entertainment 35c;" "Haircut 35c;" "Geo. Williams, extg. tooth 50c;" "Butter 3¾ lb. 25c;" "To confinement \$10.00." One important entry of this period reads "Oscar telegraphed that I was county physician."

This notebook contains more concerning money than any of the others. Anyone who has been a recently graduated medical student and who could write, as Doctor Lundy could at this time, "Cash on hand \$22.50," will realize why the dimes are noted. A table of fees which is contained in this book follows:

SOUTH WATERLOO MEDICAL ASSN. TARIFF

OFFICE PRACTICE

Office advice, where no other advice required; not regular medical attendant.....	\$1.00 to \$5.00
First office advice of regular medical attendant .....	.50 to 2.00
Same advice with minute physical examination	2.00 to 5.00
Subsequent advice to same for same malady .....	.50 to 1.00

GENERAL PRACTICE

Single visit, not regular attendant.....	2.00 to 4.00
Each visit, medical attendant.....	1.00 to 2.00
Detention, per hour	1.00
Night visits	plus 50%
Mileage .....	.50

OBSTETRICS

Ordinary obstetrics	5.00 to 10.00
Forceps (extra)	3.00 to 10.00

MISCELLANEOUS

Fracture	10.00 to 20.00
Vaginal examination	1.00
Anesthesia	2.00 to 10.00

Doctor Lundy's range of work seems tremendous to the medical graduate of today. He did almost everything and did it all well. The confirmation of this estimate of his ability rests on the minute records which he kept of many of his cases. For example, January 1, 1893, the record of an obstetrical case began as follows: "Confinement—Puer. Used forceps. Born at 2 a. m. Labor began 24 hours before. Hard labor for 4 hours. Expected child to be born at midnight. P—120 after delivery. P. M. P—104, T—99°; noon P—120, T—101.2°. Much flowing—passed piece of placenta."

Puerperal sepsis developed and the record continued for eleven days, with the utmost minuteness, an example of which is given in figure 3. The record for January 10 and 11 indicates that Doctor Lundy did not sleep for something like thirty-six hours. The last entry was made at 5:15 a. m. on January 11 as follows: "T—105; P—110, feeble and irregular."

The conclusion seemed obvious, and, after reading page after page, and coming to that conclusion, I felt genuinely depressed. However, in another notebook of that year, which records Doctor Lundy's visit to the World's Fair at Chicago, is the information that he met the woman and her husband in the California Building, and my spirits rose. He had won. The lady is still living.

Another dramatic record of a case appears in the notebook for 1894:

"Called at 11:30 a. m. to case of confinement. Mrs., could not deliver the woman. On arrival, about 2 p. m., found a neglected shoulder presentation with hand born and black. This was the condition before I was sent for (don't

know what the midwife had been doing). External version was first tried. But of no use. Then internal or podalic version was attempted under chloroform. This was persisted in for over 2 hours. The foetus lay breech high up and back to mother's right side. Head bent back onto body, chin down, and top of head near knees. Felt mouth and chin but could not make out child's neck. Felt ribs with right hand. Brought down each foot but could not turn child because of uterus turning with foetus. Gave up version. The woman was now failing fast and husband demanded that something be done to save her at once. Craniotomy was out of the question from position of head. Embryotomy was indicated from failure of version and neglected transverse presentation. Decapitation was out of the question by having no suitable instruments, nothing but forceps and pocket case. Caesarean section was undertaken to save the life of mother who appeared to be sinking fast. I would have called another doctor but thought there was no time. Chloroform was continued. An abdominal incision was made in linea alba, first through skin, subcutaneous cellular tissue and fat, then through muscle, from below the umbilicus to within 2 inches of pubis. This was very carefully divided. Catheter introduced into bladder; no urine. An incision made through uterus which was well up to abdominal wall. The child's shoulder and mouth were seen on enlarging incision. The arm was first delivered; then incision extended higher up to allow head to come, after which child was delivered with legs under armpits on their own side and feet almost through the skin. A small vessel began to bleed just above pubis and was tied. Some difficulty was experienced in removing placenta. Uterus was then well cleaned out by fingers and sewed up with four deep sutures x4. Superficial sutures of carbolicized silk. Instruments were in carbolic solution, 3 to pint. While I had no sponges, I used fine cloth in hot bichloride solution, 1:2000. The sutures were left long, eight of them, and ends brought outside together. Wound cleaned and dried. The abdomen was then closed by deep and superficial sutures but not very tight (silk). Abdomen washed off. Wound covered by cloth wrung out of bichloride. A clean, dry cloth over this and larger; then a binder, not tight. Operation about 6 p. m. Pulse 96 and 100 during next 2 hours. Felt pain on weight of clothes over abdomen. Fixed protection. Very pale and tired. Had given ergot. Left 1 P. opium $\frac{1}{2}$ grn. for after pains."

The patient recovered. In June, Doctor Lundy called Dr. J. E. Engstad of Grand Forks for

consultation in this same case. The patient was having abdominal pain, and an abdominal fistula had persisted. Doctor Engstad and Doctor Lundy operated successfully in Grand Forks. Anyone but a physician might expect that the husband would commend the doctor. But no, Doctor Lundy wrote that the husband "blames me for taking sitches out on 10th day," and that is all he wrote on that aspect of the case.

This quality of moderation in recording instances of ingratitude or incompetence is striking in Doctor Lundy's notes. One of his entries reads, "Baby 24 hours old. Fracture of left femur done at labor while midwife was using traction with her fingers, it being a breech presentation in which left foot was above head. She heard the snap." Another reads, "Carbuncle on chin. Beggs liver pills, 4, were given by Mrs." There are statements of fact like these; no railing, even though the doctor wrote full comment on his cases.

But when he wrote a recommendation he was not so restrained: "I have found the bearer, Mrs. Picknell, a thoroughly good nurse in every way. She is careful, kind, and follows instructions to the letter. I therefore bespeak for her your goodwill and assistance."

In 1890, Doctor Lundy performed an operation for harelip. In the same year he operated for cataract. This operation was successful, and, in the following year, he operated successfully on the other eye. These fields of work, in which knowledge of detail was requisite, bring out another aspect of Doctor Lundy's nature. Moreover, there is in existence a letter of December 24, 1891, to Dr. J. S. Thacher, of 33 West Thirty-ninth Street, New York, which reads in part as follows: "I have concluded to have you select a microscope for me, using your own judgment. Enclosed please find draft on New York for \$125. The practical use I expect to make of it is in daily urinary analysis, and the examination of tubercle bacilli occasionally." Previously, as letters prove, Doctor Lundy had sent sputum to Doctor Thacher for examination and report. Physicians in medical centers today consider themselves scientifically broad if they possess an ophthalmoscope and a microscope and use both personally.

That Doctor Lundy recognized limitations in himself, also an attribute of a scientist, is evident in that he referred patients to specialists and sought consultations. One of his consultants was Dr. H. M. Wheeler of Grand Forks. Doctor Wheeler was the man, who, when he was a medical student, killed one of Jesse James' band in

Northfield, Minnesota, and wounded another. The incident is related in Dr. Henry F. Hoyt's autobiography, "A Frontier Doctor." For years Doctor Wheeler used to visit Rochester, Minnesota, a gun on each hip, to watch operations at St. Mary's Hospital. The story is current, although I have not verified it, that Doctor Wheeler was granted the body of the robber whom he shot for anatomic dissection. To one who asked him where he got the cadaver he is said to have replied, "Why, I shot him."

The doctor's practice, of course, did not consist entirely of extraordinary cases. There was the general run of the usual maladies and of prescribing of the day, when prescriptions tended to be long and fearful. Most of the prescriptions appear on the blank of John H. McLain and Company, of Inkster.

Then there was the difficult necessity of making a diagnosis of typhoid fever without the aid of the Widal test. There is the instance, minutely recorded, of the Schneider family, whose hired man was taken sick in September, 1889. Then, one after another, in October and November, the members of the family became ill, in all ten, or possibly twelve, persons of the household. Doctor Lundy reserved diagnosis for a time. Pneumonia developed in one case. Finally he recorded the diagnosis, and three deaths; those of the mother aged thirty-four years, and of two girls aged ten and three years, respectively. This seems a good record. Three years later, typhoid fever was decimating American troops in the southern United States and in Cuba. It was, at that period, one of the most dreaded diseases.

Odd items crop up in the notes from time to time. One of these reads as follows: "Extracted by water a bug from left ear. This bug got into his ear in July, 1882, while he was asleep on ground (8 years in ear). Bug dried but not changed otherwise. Even feet and legs of bug were intact." There is the incident of the man whose epithelioma of the lip was due to smoking an iron pipe. I never heard of an iron pipe, although I have been a pipe smoker, and curious about pipes, for twenty years. Then there is the incident, which reads oddly to one not acquainted with place names of the region, of a confinement in Batchelor's Grove.

CITIZEN

The activities of a doctor are, or should be if possible, closely allied with his life as a member of his community. Doctor Lundy, as has been said, was county physician, and a number of clippings in his notebook for 1894 show that he took an active interest in the water supply. Early he

must have concerned himself with local political affairs, for in 1887 he made a note of the nominees resulting from a town caucus. This interest was maintained to the last incident of his life. In 1892 he became a citizen of the United States, three years after his adopted territory had become a state. He was the one who proposed the building of a church by the religious society of which he was a member, and he was a teacher in the Bible school from the time of its founding. The Sunday School of his church still has a Lundy Memorial Library as a reminder of the man who was most earnest in efforts toward its establishment. Doctor Lundy was also Worshipful Master of his lodge, and among his effects are manuscripts of debates in which he took part, and one manuscript of an address on the significance of Children's Day.

In his personal life, the year 1893 may well have been his happiest, although he was driving long distances through the weather of what seems to have been a bitter winter. But it was not bitter to the doctor. On New Year's Day he made the following entry: "Visited Forest River. Took New Year's dinner at Woods'. Left for home 10 p. m. Stormy and cold." Two weeks later: "Visited Forest River. After arriving home at midnight had to drive to Sims'. Thermometer 22 below zero."

That year spring was late. On Sunday, March 5, the temperature was 10 degrees below zero, but the doctor had a "pleasant time." He visited at Woods', left for home at 11 p. m. and arrived home at 2 a. m. There is something strange about this. A doctor may have high regard for his patients but he scarcely has a "pleasant time" while attending them. It seems unlikely that anyone was sick at Woods'; still in subzero weather Doctor Lundy was driving for three hours around midnight, and his only comment is that he enjoyed it. On the thirteenth there was a blizzard and the temperature was zero. Nevertheless on the nineteenth, Sunday, in a snow storm, he drove to Forest River again, and here is the solution of the mystery. That night he proposed to Lila Woods, and was accepted.

By April he was in the full swing of courtship, and on the eleventh his brother Oscar and he journeyed to Grand Forks, where they met Lila and another young lady, for the purpose of seeing the play, "Bleak House." On the next day, Oscar took charge of the young ladies and the doctor departed for Larimore. Winter was not over. A blizzard swept down, or across, since he was on the prairie. Three engines were wrecked on the main track, and next day, the

blizzard continuing, another was derailed. The doctor did not reach home until noon of April 14.

In May, he was arranging for the building of his house, which still stands in Inkster. On the twenty-first, two days after one of the worst blows ever seen in Dakota, he wrote: "After making some calls at McDonald's arrived at Woods'. Remained to 10:30."

In July he was planning his wedding trip: "Ira Gallagher and wife arrived home from World's Fair today. He says that a couple can be gone 3 weeks for \$100 not counting R. R. fares. It cost himself and wife less than \$200 and he bought a good many extras."

In September the couple was married and started for the World's Fair, travelling in a drawing-room. The trip was eventful, however: "Arrived at St. Paul at 7:30 a. m., where I registered self and wife. Left for Chicago at 1:25 p. m. over Wisconsin Central. Saw miles and miles of forest fires near Abbotsford, Wis. Delayed at Withee, bridge burned out. From Withee to Marshfield is 40 miles, but had to back to Chippewa Falls, Eau Claire and Marshfield, 150 miles. At Marshfield, No. 4 from St. Paul wrecked our engine, which was on side track, too close to main track. Had to remain all night on track. Left Marshfield 13 hours later."

They had a week at the World's Fair, crowded with activity, all of which is recorded in a special notebook. Then they returned to Inkster, where the doctor took up his busy practice. His call book for 1894 is crammed with records, and in July of that year is the record of the birth of his son, now, as has been said, an authority on anesthesia. There is a letter of congratulation from the old preceptor, Dr. J. W. Smith of Dundas, Ontario, who had been writing off and on in friendliness and counsel for all these years. There is also a letter from an uncle, Dr. J. B. Lundy, of Preston, Ontario.

Doctor Lundy's happy, apparently buoyant life went on until April, 1896. At that time he went to a Republican caucus at Fargo. He was ill when he started, with a cold contracted on a long drive, but he was determined to go. Pneumonia developed while he was in Fargo, where his brother Oscar, the dentist, stayed with him until he seemed to be recovering. On April 24, however, there was a relapse, from which the patient did not recover, and a life which had been a force for all that was best in a new state of the union came to an end, after thirty-five years. Several columns of the Inkster *Tribune* of April 24 are occupied by tributes and resolutions, which, although written in the fulsome style of the time, seem not, in fact, to have been exaggerated.

U. S. INDIAN SERVICE—DEPARTMENT OF MEDICINE AND SURGERY CHEYENNE RIVER SIOUX INDIANS

CHEYENNE AGENCY, SOUTH DAKOTA

Old Agency Hospital Est. Feb. 1, 1895

New Agency Hospital Est. 1915

By DR. LAWRENCE F. MICHAEL

I am a native of the State of Pennsylvania. Born in Northampton county, September 25, 1866. My recollection is that my ancestors came from Germany in the early 1700, and settled on land, under grant, to the daughter of William Penn, founder of the State. It appears that my forebears took an active part in the founding of the American republic, as well as all subsequent military operations down to the present generation in the World War. Farming has been the principal pursuit. My classification is under the heading: Pennsylvania Dutch stock, and being the second member of the Michael clan to wander away from our native Northampton county ancestral abode.

At the age of five I began attending the public schools and before my sixteenth birthday, a full fledged country school teacher. The three "R's" were the outstanding subjects in the course of study. Normal School instruction, private tutors in mathematics, science and Latin helped me over the rough places in my teaching venture and gave me a good working knowledge of the several subjects.

Early in life I conceived the idea that I would like to study medicine, and during the summer of 1885, I began the reading of medicine, in the office of my preceptor, Dr. E. L. Smock, a recent graduate of Jefferson Medical College, Philadelphia, Pa., and on September 1, 1886, entered the College of Physicians and Surgeons, Baltimore, Maryland; on recommendation and certification of my preceptor I was given a scholarship and admitted to advanced standing on account of the work done in my preceptor's office.

My preceptor was a hard taskmaster and exacting teacher. Guess work was not permitted. "Better read that again." Be reasonably sure that you are right before forming an opinion. Keep your head under all circumstances; was his advice. These admonitions stood me well in hand when I had to form my own conclusions in a difficult situation. Strict and diligent application to my studies gave me good credits at the end of the college year. On my return home I resumed my

reading in the office of my preceptor, and incidentally did odd jobs to replenish my depleted supply of cash on hand.

Fortune smiled on me and during the early summer, I had an opportunity of entering the ambulance service of St. Luke's hospital, Bethlehem, Pa., of which Dr. W. L. Estes was the chief surgeon, and superintendent in charge. Accident cases made up a goodly portion of the surgery done. The medical end was quite extensive as well. Dr. Estes, a fine surgeon, excellent diagnostician and a gentleman of the old school. To him I owe much in my efforts to master the study I had undertaken. His guiding hand and kindly interest, has always been a happy memory and an inspiration in my chosen work.

At the end of the college year, my ambition was gratified and received my diploma with the graduating class of 1888. Not yet twenty-two years old. After passing the faculty of the Medico-Chirurgical College, Philadelphia, Pa., I had qualified and was authorized to practice medicine in my home state.

My location was Bethlehem, I had made no mistake, my good friend Dr. Estes became my mentor and I made many visits to the hospital for study and counsel. Being an iron manufacturing town, and men of many nationalities employed, at a low wage, usually obligated before pay day. This afforded abundant opportunities for work in my line, with a comparative small return in cash. The experience was worth the price paid.

About this time glowing stories were being told, and retold about far off Kansas. The West was calling and my wife and I decided to heed the call in the fall of 1889. On our arrival we found corn selling at eight cents per bushel and was used as the standard supply of fuel. We soon discovered that our material condition had not been improved and quite disillusioned. Money was scarce. Farm products, in lieu of cash, were accepted as a medium of exchange. Not sufficient money on hand to return home and too proud to ask for help we decided to stay. The people were very kind to us

and we took a deep interest in our surroundings. Practice grew, but about all I had to show was book accounts, to be paid when the crops were harvested, if there was a crop. As I recall it now during the year I collected about \$500.00, although the books showed over \$4,000.00. In the mean time I had made connections with the Missouri Pacific and the Santa Fe railroads and held the appointment of local surgeon. This added to my prestige and made further demands on my time. The pay from the railroads was a pass and a very nominal fee.

At that time an income of \$4,000.00 was considerable money as compared with the present day it would not be considered much worth while. Yet the same amount of work done today would bring approximately \$12,000.00. Please remember, that this was in the day of the cyclone, drought, grasshoppers, hot winds, populists and Original Package fame. Added to this, just on the horizon was Senator Pfeffer, sockless Jerry Simpson, Carrie Nation and Mary Ellen Lease about ready to come into their own. Weather and hard times had much to do with the success of these distinguished personages.

To our south was Oklahoma, the Promised Land. An effort to open the Cherokee strip to homestead entry was an almost assured fact. Having this lure before us, an opportunity came to enter the U. S. Indian Service as agency or school physician. Stipulations: No horses to buy nor feed. No house or office rent to pay. No drugs, surgical instruments nor dressings to pay for. And above all, and this mattered most, a monthly pay check from the best pay master in the world, Uncle Sam.

A council of war was called, my friends said: "No." However, my wife and I decided to try the experiment. The U. S. Civil Service Commission had issued its first call for physicians for the service. The system of appointment was being changed from the old political preference method to that of qualifying by written examination and ratings from such examinations. The necessary application was filed with the commission, which was accepted and notice received for me to appear at Salina, Kansas, March 17, 1892.

I reported as instructed, and found that I was the only physician who had filed for the Salina examination. There were a number of others, who took tests for teacher, clerk and post office positions. The writing of the examination questions took me about six hours. The examiner complimented me for the manner in which I had done the work. About a month later I was in-

formed that my effort had been successful and that as soon as a suitable vacancy occurred a probationary appointment would be offered me.

The first one came in June, to California. Refused to accept. Reason, too much cost to get to my station. Funds short. Next, New Mexico. Same reasons advanced. Told the Commission my hope was for an Oklahoma agency or school. Bless me the next offer, Ponca Agency, Okla. Promptly accepted. Arrived there August 10, 1892. We were now in the Indian country and the Cherokee strip at our back door. Our nearest white settlement was about thirty-five miles to the north, Arkansas City, Kansas. To the east and south was Indian country and a population of white folks who felt safer there, for reasons best known to themselves and the law. The common practice was to ask the traveler no questions as to where he was from nor as to his destination. THE PONCAS.

The reading of Helen Hunt Jackson's book: "A Century of Dishonor," will give a splendid idea of the plight of the Ponca Indians, at that time. A disheartened people, sick and discontented. Longing and hoping that they might yet be allowed to return to their beloved Nebraska. Malaria, tuberculosis and other diseases of malnutrition, improper housing, was their enemy and thinning their ranks. The native medicine man was still much sought after and quite a favorite. While the white doctor was, it seemed, called on as a last resort, by the majority of these Indians. Unfortunately, my predecessor was not particularly interested in his charges, only insofar, as it affected his pay check.

My only means of dealing with these people was through an interpreter. I soon discovered that this was not a very satisfactory method of getting in close relationship with my patients. A working knowledge of their language was desirable, and I set about to see what I might accomplish along that line. After a few months of intensive study, I had mastered a sufficient vocabulary to answer my purpose. This brought me closer to them and inspired confidence, but found that it added to my work considerably, which I didn't mind in the least.

It was a common practice, in a routine way, to dispense compound cathartic pills, epsom salts, and occasionally, a dose of double ten. No wonder that the medicine man prospered. The contact between patient and physician was almost nil. An unfortunate situation to say the least. In my desire to serve them I followed the general routine practice then obtaining among white people.

At first it seemed to my patients that I was unduly inquisitive but soon accepted as not a bad idea. Patience and tact was my principal stock in trade and in the end paid a good dividend. Word was being passed about that the new doctor was: "Oda choby," very good. Visits to their homes made for a better feeling between us. I made it my special business to look after sick school children during the vacation period.

About this time the last big run for homesteads was to be staged. The Cherokee strip was to be thrown open to settlers. The reservation bordered on the south line of the strip. We of the reservation had been informed that no run could be made from the Indian country, and it was, therefore, necessary to make the "Run" from the south line of Kansas. Thousands of prospective homesteaders were lined up along the north, west, part of the south lines of the promised land, ready for the rush at high noon, September 16, 1893. Never, never have I seen such a motley crowd. Restless and eager to go. Each for himself. Men, women and children were in the assembly. Vehicles of every kind and description, from the sulky to the prairie schooner.

No stretch of imagination can picture that crowd of home seekers, and I among the lot. It was too much for me and I returned to the agency on the third section of the train carrying "strippers." That experience had been enough to cure me of wanting to adventure of homesteading. Yet had I made my entry where I had planned, today, that same land would be worth many thousands of dollars, in oil and gas royalties alone. The next few years were rough and tough for these people in that section. Drought and poverty did its work with a vengeance. We left the Indian service and came to one of the new towns, much against the wishes of the Indian Agent and the Indians, but we thought we were missing an opportunity to get ahead. We expected the new town would do for us, all that which is expected from a new country, prosperity and plenty. Not so, we had learned that it was a hard and difficult path. It was the same old story, work but no money. We were in a real frontier country. No make believe. Wild and wooly. Killings not infrequent. Remnants of outlaw bands hiding in the rough lands of the adjacent Indian country. Claim jumping, lot jumpers, at so much per jump, making for a combination of surroundings not to our liking.

My wife and I called another council of war and after due deliberation, decided that we would probably be more agreeably and pleasantly situated back in the Indian Service. An application

for reinstatement was dispatched to the Commissioner of Indian Affairs, and it seemed as no time at all before a telegram arrived offering an appointment to the Sioux Indian country, at Cheyenne Agency, South Dakota. The offer was accepted promptly, and we never regretted our move to the land of the Dakotas.

Before starting on the Dakota section of this disconnected narrative, let me tell you very briefly of a holdup that took place in one of the new towns, to the south of us. I was then doing the local surgeon's work and a hurry up telegram reached me from the station agent at Redrock: "Come at once." But a few minutes to get to the south bound train and be on my way, I expected some railroad work. But on arrival the agent directed me to a large store building where he informed me that a holdup had been staged and a man seriously wounded by the bandits. There seemed to be a general air of unusual quiet and calm about the place. Most of the residents of this place were from sections of the country where such things had passed into history. On entering the room, I found it well filled with men, women, and a few children. A young woman was sitting on the floor, near the middle of the room, holding in her lap the head of a young man. She was moaning and softly crying, that he must not leave her, saying the doctor is here now, and he will fix you up all right. The man was dead and had been for some time. I learned that the couple had been recently married and to save the wife from the cold blunt fact that her husband was dead, we succeeded in getting her to go with one of her lady friends to her home, on the pretext that it would be better so, while I fixed up her husband. When she did finally learn the truth, the sight was most pitiful, never have I seen such grief and despair. It left with me a picture never to be forgotten.

Ponca Indian Medicine Man:

This particular Indian stood high in the esteem of the Poncas and ranked as a master of his art. He was a small, frail, shriveled, rather sallow looking individual and below average height. Keen, sharp, piercing black eyes. A mystic. Kept very much to himself and had but little in common with white folks. To give him the once over, gave you the impression that he was about ready for the happy hunting grounds. But not he. When he did his stuff and went into action his voice was full and strong and an all night session was his portion. The usual fee, if successful, one pony, value, not much. He claimed allegiance to the Eagle clan. His bag was full of tricks. Eagle wings and claws. Eagle wing

bone whistle, cedar wood flute, beaver claws, etc. Incantation his strong card. Cupping was much practiced, a buffalo horn being used for this purpose. First scarification, then the cupping, followed by a plentiful rubbing of cayenne pepper. Warm treatment and it was used for all kinds of illness and on the old and young alike.

I found that the practice of the physicians before me was to get into a fight with this old chap and perhaps land him in the guard house. Yet he continued his work as soon as released. It occurred to me that perhaps a little friendship and kindness might not be out of the way with him. At first he was very shy, but after a time he seemed to warm up some. He was not used to this and looked upon the white medicine man as his sworn enemy. I never missed an opportunity to greet him: "Coc-a Ho!" Friend, hello. His answer; "Ho!" One evening as I was closing up shop he slipped in the office and said: "Friend doctor, give me some little bottle medicine. I am shaking every other day when the sun is about so high," indicating about ten o'clock. What he wanted was quinine in capsules. The potency of this drug was of general knowledge to both Indian and white people, in the cure of chills and fever, plus calomel. My next contact was about two weeks later. Much relieved and improved. "Mucca oda choby, coc-a we wets." "The medicine very good, my friend. Tell no one. White doctor always make trouble for me. We are friends." I always felt that, in a way, he was a help to me instead of a hindrance. I never found any evidence, after that, of this interfering with my patients, in a harmful way.

SIoux COUNTRY:

On September 1, 1894, I with my wife and two children, got our first sight, from the bluffs of the Missouri river, of the Agency across the river. Being Sunday the agency office was closed. There had been a change in agents and a general reorganization of the force was in progress. I met most of the employes that evening and took a liking to them all. The force was small in number. This was before the telephone and the typewriter was still considered a non-essential. Maj. Peter Couchman was the last to greet me, he being the agent. He was most cordial, and told me to run the medical end and he would support my work, if satisfactory. He was a large man in every way, and as likable a man as you would care to meet. I can not say this of some other Indian agents that I had met before, and later.

My office was a small, two-room affair. For transportation, a span of sorrel mares, the best

ever, a buckboard and that springless. A young Indian who had attended the Genoa Indian school, at Genoa, Nebraska, who carried the official designation of physician's helper. A splendid chap. His duties were that of interpreter, office man and driver on my trips. For a residence we had a five room house, fairly well furnished. Water for all purposes was hauled in either tank wagon or barrels from the river, about twice a week. Our first introduction to Missouri river water was not so bad, rather hard but clear. However, when the spring breakup of the river came it was *very* muddy and rather discouraging to those housewives who had planned on a wash day, a day usually sufficed for settling and the trouble was over until the next delivery. An extra barrel helped to solve part of this problem by keeping just so much in reserve.

At the Agency boarding school, I met the superintendent. A quite likable chap but one who was inclined to follow lines of least resistance. His corps of employes was of the average as found in the schools at that time. Everything was done by hand. No labor saving devices of any kind. Water was hauled here, the same as at the agency, by the "Big" boys of the school. Truly a real drudgery, and still an inadequate supply of water. The school had a capacity of about one hundred, about equally divided between boys and girls, and employes had to be provided with quarters as well. The practice had been to over-crowd the claim being that many would drop out during the school year. The school's allowance was based upon enrollment, being something like \$150.00 for each pupil. All expenses for the school had to be met from this allowance. All salaries, and the general upkeep, food, clothing, purchase of livestock, etc. Not a very inviting prospect. I fought the overcrowding. The Agent supported me and the superintendent was displeased. We got through the year very well and with few breakdowns in pupils' health as compared with former years.

At the end of the school year there was a general cleanup of school employes and another superintendent reported for duty. His attitude was more considerate as to the rights of others and the general good of the school. Maj. Couchman had succeeded in getting a special appropriation for an artesian well to relieve the water situation. That winter work was begun and the following fall the well was brought in. Lots of water but not fit for certain domestic purposes. It relieved the situation considerably, and gave

fire protection. Up to this time there was no fire protection of any sort. And it was enough to make you feel as though you should condemn the entire plant so far as the dormitory facilities were concerned. During the next few years many changes were made in the way of improvements, labor saving equipment. Today the school has been modernized in every particular. Steam heat, water from the river and electric lights, these latter have been added quite recently. It always meant a fight to get money for Indian schools up to the last ten or twelve years.

Pardon this digression. To return to my first introduction to my Sioux charges; it took a few days to get settled and then my first reservation trip. The territory covered was forty by one hundred miles. The fall roundup for pupils had begun and school was to open in a short time. My work was to pass on the physical fitness of the pupil where the question was raised by the parents. After my first year I made it my business to examine every child presented for school attendance. The unfit were weeded out in this way, and at times much to the displeasure of the head of the school. Quantity and not quality was the vogue, prior to this time, so we reversed the order.

My helper and I took off from the Agency for Ft. Bennet, where St. John's Boarding School for girls was located and where formerly the agency headquarters and the boys' school had been situated. The Agency had been recently moved from Ft. Bennet to a new location up the Missouri river. We arrived without mishap. We were made welcome. This was an excellent school in every particular, and under the direct control of the Episcopal Church, and was known among the Indians as the Bishop's school, that able and noble missionary and much beloved by white and Indian alike, Bishop Hare. Let me say that you could always tell a St. John's pupil by her bearing and deportment. Another school that put its trade mark on its students was located at Oahe, under the jurisdiction of the Congregational Church and in charge of Rev. T. L. Riggs, universally loved and respected by all who had the good fortune to become acquainted with him. These two schools were outstanding examples of efficiency in the training of Indian boys and girls. After a hurried inspection of the school we were off the next morning, for Cherry Creek, about sixty miles to the north and west. We reached our destination without mishap and found many Indians in camp attending a gathering of the Congregational church people. After our work there we started on our return trip home. I had

been away from home eight days and traveled about three hundred miles, without change of horses or *buckboard*. That buckboard was always a sore spot in my memory, and it took two years to get the necessary authority to buy material, in the rough to construct a buggy, and it was stipulated that all the work must be done in the Agency shops, *I got the buggy*.

My next introduction to my Sioux charges was on Ration day. The reservation population was about 1,700, men, women and children. Scattered over a large territory, mostly in small groups, under one of the leading men of the camp. Nearly one-half of the Indians received their supplies at the Agency including the monthly issue, of Government treaty food, stipulations, the rest received supplies at the two sub-stations.

The custom was to bring the entire family to the issue of rations, the early arrivals being several days ahead of the general gathering. Issue day was on Monday. Saturday evening before would see them all in camp. A quiet orderly gathering. Sunday morning you would find them attending the church of their faith; if no building was available services would be conducted in camp.

On Monday morning the delivery of supplies would begin. First the delivery of beef, on the hoof, by the contractor and the number delivered would run from one hundred fifty to one hundred seventy head. Beef for the outstations would be started, on foot, for those places as soon as accepted by the inspector, who was detailed from the nearest military post. At the Agency, the killing began as soon as the first lot had been weighed in. All the work done by Indians under a boss butcher. Births were reported without delay; some anticipating such an event, would occasionally cause an error in sex. The allowance was one and one-half pounds per day and other small rations in proportion. Meat was the outstanding item of diet. Flour, rice, beans and other things of that nature were not eagerly sought after. This would give a family of five, two hundred pounds of beef for the next four weeks. The contract price, at that time was about four cents a pound, on foot.

The offal and liver, was much sought after, and the doctor was often appealed to for a word to the butcher force, to please remember the suppliant. Liver was often eaten raw, cut in strips and dipped in the bile. Considered good medicine today by the ethical practitioner. This had a double purpose. It first stopped hunger, and secondly relieved the intestinal tract of its contents. It was never eaten gluttonously, they

seemed to know when enough was enough. To those of us not joining in the "eats" the comment was usually something after this fashion. "Pejuta waste." "Good medicine." Ration day was a busy day for everybody, including the doctor. The entire range of ills came to his attention. Tuberculosis, gastrointestinal and many other physical disturbances. Toothache was a common minor ill, and to do from six to a dozen extractions on ration day was nothing out of the ordinary.

I was rated as very "Wy-u-pe." Translated, means accomplished operator. Granulation of the eyelids was quite common and trachoma was also found occasionally. Corneal ulcers, and scars, of such involvement were noted. Oh yes, and tapeworm, the result of eating offal and undercooked meat. This will give some idea of the day's work as found in the Indian country, by the Agency physician.

Needs for hospital facilities became more and more urgent, but how to get them was the problem to be solved. I had discussed the subject with Maj. Couchman and he concurred in my desire for a hospital. Finally, the opportunity came and the matter was presented to Mr. Cadman, Inspector for the Interior Department and assigned to the matters of Indian Affairs. An inspector was a relative of the then president, Grover Cleveland. He proved himself a very charming gentleman, when the time came to take up my proposition for his approval or rejection. It was presented briefly and fully, my plans for doing this had been carefully laid. An abandoned day school building was to be moved to the agency and made habitable and used for hospital purposes for both school and agency patients. The cost for the project was very nominal. Mr. Cadman listened very carefully to my plea and when I had finished my speech, he smiled and a happy twinkle in his eyes, told me that I had his approval. He said, in substance this: "Doctor, that is just

what you need in this north country and I shall be glad to make a special report, as to this need. You and the Agent write a joint letter setting forth the need and it will bear my endorsement with proper comment. By the way, I have heard of your work among the Poncas which is quite complimentary to you. I feel confident that the Department will approve and Cheyenne Agency will get that little hospital you so much want. I wish you success in your ambition and venture."

The project was approved by the Department and was opened for patients during March, 1895. I have endeavored to fix the exact date of the opening but the Agency records fail to disclose the event.

Accommodations for eight patients were provided and quarters for three employees. The following year the building was remodeled and enlarged and the capacity increased to sixteen. The venture was a success from the start. During the winter months filled to capacity. No hard and fast rules obtained. Visitors were always made welcome. It was all a matter of education both for the patient and the reservation population in general.

At this time I wish to pay tribute to my good friend and guide, the resident missionary, who knew these people intimately from long association and had their full confidence, the Rev. Dr. Edward Ashley of the Episcopal church. Under his faithful work many chapels were founded in different sections of the reservation with native trained workers in charge. We made many trips together over the reservation. To all the other missionaries I can say that they too always supported my efforts. A great inspiration to me then in my work, a busy life, and now in the evening of life, a happy memory of a work well performed.

EDITOR'S NOTE: Since this article is so intensely interesting, and is of such great historical value, and as space does not permit the publishing of it in its entirety, it will be concluded in the next issue.



THE JOURNAL-LANCET

REPRESENTS THE MEDICAL PROFESSION OF
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA and MONTANA

THE OFFICIAL JOURNAL OF THE

North Dakota State Medical Association

South Dakota State Medical Association

The Hennepin County Medical Society

North Dakota State Health Officers Association

The Minnesota Academy of Medicine

The Soo Railway Surgical Association

The Sioux Valley Medical Association

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MINNEAPOLIS, MINN., JUNE 1, 1931

THE JOINT MEETING

The North and South Dakota State Medical Associations are to be congratulated on the occasion of their joint meeting to be held at Aberdeen, South Dakota, June 1, 2, 3 and 4, 1931.

The practice of medicine has made great strides since the early pioneer days of Dakota Territory of fifty years ago and the medical men of both states have always kept in the forefront of medical progress.

The spirit of co-operation and good fellowship demonstrated by the holding of a joint meeting, as well as the interchange of ideas and the discussion of common problems, is an example that should be followed more often by other neighboring states.

The program arranged, consisting of clinics in the morning and papers in the afternoon by leading teachers and clinicians of the Northwest, Chicago and Canada, speaks well for the progressive spirit of the two societies.

FOOD POISONING

There have been two striking outbreaks of food poisoning in the Dakotas this last winter. The one, botulism, was reported briefly by Dr. R. W. Allen in THE JOURNAL LANCET, March 15. The other, obviously not botulism, was referred to editorially in the same number; Dr. Ohlmacher and Dr. Tillisch will report their investigations soon.

The subject is large, but several points should be mentioned in passing. Related to the food poisonings are the infections received through the gastrointestinal tract; some are well known and are recognized as infections; others are indefinitely placed. Poisons are sometimes taken with

food accidentally, or where there is suicidal or homicidal intent. There is the possibility of poisoning by metals used in and about the handling of food; there is the possibility of poisoning by preservatives, adulterants, and flavoring and coloring matter. Some varieties of mushrooms and other substances, both plant and animal, are poisonous in themselves. Idiosyncrasies and food allergies are sometimes encountered; here the fault is with the patient rather than the food. Probably in many individual mild cases of supposedly bad food the trouble is really due to disturbances of the secretions, accompanying excitement and fatigue (Alvarez, JOURN. A. M. A., 1929, 92, 1231). Moreover, where careful investigations with autopsies have been made in many cases of death from alleged food poisoning, or "ptomaine" poisoning, it has been found that the original diagnosis was very often wrong; anemia, appendicitis, cancer, cerebral hemorrhage, and many other conditions have each at times had to be substituted as the real cause of death (Rosenau, Med. Clin. of N. A., 1918-19, 2, 154); (Geiger, JOURN. A. M. A., 1923, 81, 1275). Finally the term "ptomaine poisoning" should no longer be used.

Leaving the above considerations there still remains an interesting field, to which a great deal of study has been given and about which many definite facts are known, but which requires much further investigation. Clinically two groups are recognized.

The one group is botulism. In this the symptoms pertain to the nervous system, and do not satisfy the popular idea of a food poisoning at all. The picture is characterized by weakness, dizziness, failure of accommodation, disturbances of salivary secretion, difficulty in swallowing, talking, and breathing, and paralysis, all of more or less intensity, and going on to death by respiratory paralysis or to slow recovery. Vomiting occurs only sometimes; there is usually no abdominal pain; there is no elevation of temperature;

constipation is the rule, no doubt due to paralysis. The symptoms usually develop in from twenty-four to forty-eight hours; death, if it occurs, usually follows within another twenty-four or forty-eight hours. The mortality is likely to be from 60 per cent to 70 per cent or higher. In addition to the characteristic clinical signs, it has come about that this disease is one of the most readily recognized bacteriologically, if any of the offending food is available. Botulism is due to an extracellular toxin produced in the food, not in the patient. The organism is a spore bearing anaërobe that of itself seems not to be pathogenic. Occurring in the soil the organism probably frequently contaminates foods. When its spores escape the canning or preserving process, and when it finds conditions favorable, it goes on to produce one of the most virulent toxins. Antitoxins have been developed that work perfectly with the laboratory animal, or when given at the same time as the toxin; they enable the laboratory worker to identify the organism and to distinguish between its several types. Unfortunately they are as yet of but little use therapeutically, probably because the toxin has become fixed in the tissues between the time of ingestion and the appearance of the symptoms. Fortunately the condition is rare. Of late years, in the United States at least, it seems to have occurred almost exclusively after some fault in the home canning of vegetables. The results, however, when it does occur, are so tragic that the campaign of education in canning methods should be pushed more vigorously by health departments and experts in cooking. Thoroughly boiling or heating all canned foods before they come to the table should also remove all danger, as the toxin is thermolabile.

The other group of food poisonings is characterized by gastrointestinal symptoms, vomiting, abdominal pain, diarrhea, and usually a moderate elevation of temperature. The symptoms begin in from six to twelve hours, or earlier. The condition is likely to be over in two or three days, though it may extend over weeks. Recovery is the rule, though death may occur. There is great variation in the severity of different outbreaks, probably due to the variety of organisms that may be involved. Here the offending food is probably always meat or some other animal product, from a diseased animal or from contamination by human handling, or by vermin. Poor refrigeration and insufficient cooking are the next steps at fault. The data are incomplete and somewhat conflicting, but it is known that under these

circumstances certain organisms go on to multiply in the food, and it would seem that the poisonings that result vary all the way from conditions that had better be called infections to true intoxications. The toxins seem at times to be closely associated with the organisms themselves, at other times to be extracellular and filterable. The known offending organisms are several of the *Salmonella*, or paratyphoid-enteritidis group. Several strains of hemolytic staphylococci also have toxogenic properties, and multiplying as above in milk or other food are able to produce the symptoms of acute gastroenteritis. Jordan has shown that the toxin here is filterable, and he remarks that it is probable that food poisonings due to this organism have occurred much more often than is generally recognized (Jordan, "Food Poisoning and Food-Borne Infection," 1930, 244). The prevention of the second group of poisonings again amounts to cleanliness and intelligent care in the preparation of foods.

—H. E. F.

DR. EDMOND N. NELSON

Following a brief illness, Dr. Edmond N. Nelson died at Luther Hospital, Watertown, South Dakota, on the 7th of May, 1931.

Death was due to pneumonia, complicated by diabetes with which Dr. Nelson had suffered uncompainingly for many years.

During his foreshortened life Dr. Nelson had accomplished a great deal. Besides his Medical degree, he had earned the degrees of Bachelor of Science, Master of Arts, and Doctor of Philosophy, having majored in Bacteriology. He was a graduate of South Dakota State College and the University of Minnesota. It was at the last named institution that his most important work in bacteriology was done.

In 1927 Dr. Nelson located at Watertown, and soon was enjoying an extensive practice. He was elected a member of the Staff of Luther Hospital, and in December, 1930, was elected President of the Watertown District Medical Society.

Dr. Nelson is survived by his father and mother, Mr. and Mrs. A. G. Nelson of Estelline, South Dakota, at which place he was born in 1895. Besides his parents and more distant relatives, he leaves a host of friends to mourn his loss.

In the comparatively short time he was here, Dr. Nelson had established a firm place for himself and was considered with high regard by both patients and colleagues.

NORTH AND SOUTH DAKOTA STATE MEDICAL ASSOCIATIONS IN JOINT SESSIONS

TENTATIVE SCIENTIFIC PROGRAM

SACRED HEART SCHOOL AUDITORIUM, ABERDEEN, SOUTH DAKOTA

First Day—Tuesday, June Second Nineteen Thirty-one

- 8:00 A. M. Opening Exercises. Announcements.
- 8:30 A. M. Clinic. Obstetrics—J. C. Litzenberg, M. D., Minneapolis, Minn. "Prof. Obst. and Gyn., Univ. of Minnesota Medical School."
- 9:30 A. M. Clinic. Cardio-Vascular Diseases—Walter W. Hamburger, M. D., Chicago, Ill. "Asst. Clin. Prof. Med., Rush Medical College."
- 10:30 A. M. Recess. "Visit Exhibits."
- 11:00 A. M. Clinic. Orthopedic—Emil S. Geist, M. D., Minneapolis, Minn. "Assoc. Prof. Orth. Surgery, Univ. of Minn. Med. School."

Noon

- 1:30 P. M. Presidential Address—Andrew Carr, Sr., M. D., Minot, N. Dak. President North Dakota State Medical Association.
1. "Toxemia of Pregnancy." J. C. Litzenberg, M. D., Minneapolis, Minn.
Discussion—Geo. M. Williamson, M. D., Grand Forks, N. Dak.
 2. Endocarditis—William Boyd, M. D., Winnipeg, Ont., Canada. "Prof. of Pathology, Univ. of Manitoba Faculty of Medicine, Winnipeg."
Discussion—J. O. Arnson, M. D., Bismarck, N. Dak.
Recess. "Visit Exhibits."
 3. "Prognosis in Cardiac Diseases"—Walter W. Hamburger, M. D., Chicago, Ill.
Discussion—William C. Nichols, M. D., Fargo, N. Dak.
 4. Paper. "Diet in Orthopedic Surgery"—Emil S. Geist, M. D., Minneapolis, Minn.
Discussion—P. H. Burton, M. D., Fargo, N. Dak.

Second Day—Wednesday, June Third Nineteen Thirty-one

- 8:30 A. M. Clinic. Gynecological—Rae T. LaVake, M. D., Minneapolis, Minn. "Asst. Prof. Obst. and Gyn., Minn. 4."
- 9:30 A. M. Medical Clinic. "Pyloric Infections."—Joseph L. Miller, M. D., Chicago, Ill. "Clinical Prof. Med. Rush Medical College."
- 10:30 A. M. Recess. "Visit Exhibits."
- 11:00 A. M. Clinic. "Diseases of the Biliary Tract."—E. Starr Judd, M. D., Rochester, Minn. President-elect A. M. A. "Prof. Surg. Univ. of Minnesota Post Graduate Medical School."

Noon

- 1:30 P. M. Presidential Address—Percy D. Peabody, M. D., Webster, S. Dak. "President South Dakota State Medical Association."
1. Paper. "General Considerations of Iritis"—Thomas Allen, M. D., Assistant Professor of Ophthalmology, Rush Medical College, University of Chicago, Chicago, Ill.
Discussion—Rolfe Tainter, M. D., Fargo, N. Dak.
 2. Paper. "Chronic Arthritis"—Joseph L. Miller, M. D., Chicago, Ill.
Discussion—Paul Roe, M. D., Minot, N. Dak.
Recess. "Visit Exhibits."
 3. Paper. "Organized Medicine"—E. Starr Judd, President Elect of the American Medical Association, Rochester, Minn.
Discussion—Eric P. Quain, M. D., Bismarck, N. Dak.
 4. Paper. "Leucorrhea."—Rae T. La Vake, M. D., Minneapolis, Minn.
Discussion—J. E. Countryman, M. D., Grafton, N. Dak.
 5. Paper. "The Operative Treatment of Hemorrhoids; an Anatomical Method"—W. A. Fansler, M. D., Minneapolis, Minn. Lantern Demonstration.

Third Day—Thursday, June Fourth Nineteen Thirty-one

- 8:30 A. M. Clinic in Dermatology—Henry E. Michelson, M. D., Minneapolis, Minn. "Professor of Dermatology and Syphilology, University of Minnesota Medical School."
- 9:30 A. M. Clinic. Medical.—J. A. Myers, M. D., Minneapolis, Minn. "Assoc. Prof. in Med. Univ. Minn. Medical School."
- 10:30 A. M. Recess. "Visit Exhibits."
- 11:00 A. M. Clinic. Pediatric.—Henry F. Helmholz, M. D., Rochester, Minn. "Prof. Ped. Univ. Minn. Post Graduate Medical School."

Noon

- 1:30 P. M. Paper. "Treatment of Syphilis."—Henry E. Michelson, M. D., Minneapolis, Minn.
Discussion—W. F. Sihler, M. D., Devils Lake, N. D.
1. Paper. "Fevers of Obscure Origin in Childhood."—Henry F. Helmholz, M. D., Rochester, Minn.
Discussion—Floyd O. Woodward, M. D., Jamestown, N. Dak.
Recess. "Visit Exhibits."
 2. "Relationship Between Tuberculosis in Children and Adults."—J. A. Myers, M. D., Minneapolis, Minn.
Discussion—J. E. Hetherington, M. D., Grand Forks, N. Dak.
 3. Paper. "The Justification of Collapse Therapy for Pulmonary Tuberculosis."—Everett K. Geer, M. D., St. Paul, Minn.

ENTERTAINMENT

Tuesday, June 2

4:00 P. M.
Golf Tournament
Aberdeen Country Club
7:00 P. M.
Buffet Supper
followed by
Smoker and Vaudeville Stunts
7:00 P. M.
Auxiliary Theatre Party
All visiting ladies invited.

Wednesday, June 3

6:30 P. M.
Association Dinner
at
First Presbyterian Church
Toastmaster—R. G. Mayer, M. D., President,
Aberdeen District Medical Society
Hon. Warren Green, Pierre, S. Dak.
Governor, South Dakota
James Grassick, M. D., Grand Forks, N. Dak.
Andrew Carr, Sr., M. D., Minot, N. Dak.
Pres., North Dakota State Medical Association
Percy D. Peabody, M. D., Webster, S. Dak.
Pres., South Dakota State Medical Association
9:00 P. M.
Dance, Cards—Country Club
Physicians, their wives and guests
* * *
Courtesy
Cards for Golf Provided by
Aberdeen District Medical Society

WOMAN'S AUXILIARY**Of The****SOUTH DAKOTA STATE MEDICAL ASSOCIATION**

1910—Twenty-second Annual Session—1931

OFFICERS

President—Mrs. T. J. Billion, Sioux Falls
1st Vice President—Mrs. R. G. Mayer, Aberdeen
2nd Vice President—Mrs. J. C. Ohlmacher, Vermilion
Sec'y-Treas.—Mrs. N. K. Hopkins, Arlington

PROGRAM**Tuesday, June 2nd**

9:30 A. M. Registration at Alonzo Ward Hotel.
10:00 A. M. Auxiliary Meeting at Alonzo Ward Hotel.
11:00 A. M. Mrs. James Blake, Hopkins, Minn., National Auxiliary Vice-President.
1:00 P. M. Luncheon at Alonzo Ward Hotel.
2:00 P. M. Bridge at Alonzo Ward Hotel.
7:00 P. M. Theatre Party.

Wednesday, June 3d

10:00 A. M. Auxiliary Meeting at Alonzo Ward Hotel.
2:00 P. M. Musical Program at Aberdeen Teachers' College, Sun Parlor, Lincoln Hall.
3:30 P. M. Tea at St. Luke's Hospital.

4:00 P. M. Trip through St. Luke's Hospital.
6:30 P. M. Dinner at Presbyterian Church.
9:00 P. M. Dance at Aberdeen Club.

Thursday, June 4th

10:00 A. M. Golf at Aberdeen Country Club.
1:00 P. M. Luncheon at Aberdeen Country Club.

LOCAL COMMITTEES

General Chairman of Arrangements—Mrs. R. G. Mayer
Reception Committee—Mrs. P. D. Peabody,
Mrs. R. G. Mayer, Mrs. F. Kraushaar
Luncheon and Bridge—Mrs. T. P. Ranney, Chairman
Theatre Party—Mrs. J. D. Whiteside, Chairman
Musical Program—Mrs. F. W. Freyberg
Tea and Tour—Sisters at St. Luke's in charge
Dinner Dance—Dr. and Mrs. E. A. Pittenger, Dr. and
Mrs. Owen King, Dr. and Mrs. B. C. Murdy
Gold—Mrs. F. Kraushaar, Chairman

THIRTEENTH ANNUAL SESSION**Of The****NORTH DAKOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY**

Aberdeen, South Dakota, June 3d

Alonzo Ward Hotel

OFFICERS

President—J. P. Miller, M. D., Grand Forks
Secretary—F. L. Wicks, M. D., Valley City
Luncheon 1:00 P. M.

PROGRAM

2:00 P. M.

1. "Angiosclerosis in the Retina."
Thos. Allen, M. D., Chicago, Ill., Assistant Clinical Prof. Ophthalmology, Rush Medical College, University of Chicago.
Discussion—L. N. Grosvenor, M. D., Huron, S. Dak.
2. Management of Otitic Meningitis.
Bert H. Hampstead, M. D., Rochester, Minn.
Discussion—R. A. Kelly, M. D., Mitchell, S. Dak.
3. Retrobulbar Neuritis.
Diven, M. D., Bismarck, N. Dak.
Discussion—J. B. Gregg, M. D., Sioux Falls, S. Dak.
4. Latent Mastoiditis in Children.
W. R. Winn, M. D., Fargo, N. Dak.
Discussion—H. C. Peabody, M. D., Webster, S. Dak.

* * *

**Section of Ophthalmology and Otolaryngology
South Dakota State Medical Association
Co-operating**

L. N. Grosvenor, M. D., Chairman, Huron
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LOCAL COMMITTEE

J. D. Alway, M. D.; Frank Miller, M. D.;
Robert Murdy, M. D.; L. D. Whitney, M. D.
All of Aberdeen

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. F. E. Wolfe, formerly located at Britton, S. D., has moved to Oaks, N. D.

Dr. H. E. Drill, formerly in practice at Battle Lake, has moved to Hopkins, Minn.

Dr. R. T. O'Neill, Great Falls, Montana, has moved to Choteau, and opened offices for general practice.

Dr. Rex E. Graber, Bismarck, is to be married this month to Miss Lois Howard, a resident of Wells, Minn.

Dr. Abbie A. Jarvis, who has been in active practice at Faulkton, S. D., for over thirty years, passed away recently after a short illness.

Dr. W. G. Benjamin, Pipestone, Minn., will spend three months in postgraduate work at the leading hospital clinics in Europe this spring.

Dr. F. A. Engstrom, Wanamingo, Minn., has moved to Kenyon, Minn., where he has purchased the practice of the late Dr. O. S. Nesseth.

Plans are under way to construct a \$400,000 Tuberculosis Sanitarium at some central city in Montana this season, for the exclusive use of Indians.

Dr. Richard E. Scammon, after a year's absence from the faculty of the University of Minnesota, will return this fall to fill the new post of Dean of Medical Science.

A new \$100,000 hospital will be built this season at Vermilion, S. D. The building will be four stories high and all the modern hospital appliances will be installed.

Mrs. James Blake, Hopkins, Minn., was made president of the Ladies' Auxiliary of the Minnesota State Medical Association at the annual meeting in Minneapolis last month.

Dr. F. R. Wright, Minneapolis, was a guest of the Renville County, Minn., Medical Society recently, and gave a very interesting lecture on "Genito-urinary and Venereal Diseases."

Dr. Hugh J. McDonald, pioneer physician and surgeon of Butte, Montana, was recently tendered

a banquet by the citizens of that city, in recognition of his forty years of active practice.

The Yellowstone Valley Medical Society held its annual meeting last month at Billings, Montana, with Dr. Leroy Southmayd, president of the State Association, as principal speaker.

Dr. Edmond N. Nelson, Watertown, S. D., died suddenly last month after an illness of only two days. Dr. Nelson was 34 years of age and a graduate of the University Medical School of Minnesota.

Formal dedication of the new \$150,000 service building at Nopeming, Minn., was observed on May 12th. Dr. T. A. Laird, superintendent of the hospital, has been in charge of the construction.

A new addition to the St. Joseph Hospital at Dickinson, N. D., at a cost of nearly \$50,000 will be started this month, which will increase the capacity of the hospital by the addition of 36 private rooms.

The Northern Minnesota Medical Association will hold its annual meeting in Hibbing, September 18-19th. Any information desired can be obtained by addressing the secretary, Dr. O. O. Larson, Detroit Lakes.

The Minnesota Pathological Society held their annual meeting at the University of Minnesota last month. Dr. T. A. Peppard, president of the society, made an excellent talk on "An Outline of Medical History."

Dr. W. H. Moore, Valley City, N. D., was elected president of the Health Officers Association of that state, with Dr. H. O. Halverson, Minot, vice president, and Dr. A. W. Whittemore, Bismarck, secretary.

The Ladies' Auxiliary of the Redwood-Brown Co. Medical Society held a very interesting meeting this month, their guests being Mrs. Hesselgrave, St. Paul, and Mrs. Blake, Hopkins, both being officers of the State Society.

The annual meeting of the Southwestern Minnesota Medical Association was held at Luverne, Minn., with about 75 members present. Dr. E. W. Arnold, Adrian, Minn., is president, and Dr. E. G. McKeon, Pipestone, secretary.

Doctors of Essex, England, have inaugurated a medical service for the benefit of the \$1,250-\$2,000-a-year man and family. He is offered a full medical service for himself, his wife, and children at a cost of 2 cents a day each.

Dr. Arne A. Stemsrud, who has been in active practice at Dawson, Minn., during the past thirty

years, died suddenly last month from heart trouble. Dr. Stemsrud was 60 years of age and a graduate of the University of Minnesota.

Dr. Leo M. Crafts, Minneapolis, has been named as a delegate to the International Neurological Congress which meets at Berne, Switzerland, the coming September. While abroad, Dr. Crafts will spend several weeks in travel on the Continent.

The Inter-State Post Graduate Medical Association of North America will hold its annual meeting at Milwaukee, during the week of October 19 to 23, 1931. Any information will be sent by writing the secretary, Dr. Edwin Henes, Jr., Milwaukee, Wis.

Writings of a complete history of the Minnesota State Medical Association, for which material has been collected during the last four years, will soon be ready for publication. Dr. Arthur S. Hamilton, Minneapolis, who has compiled the data, is supervising the writing of the book.

Any reader of the JOURNAL-LANCET, and especially those who attended the Minneapolis Assembly of the Interstate Postgraduate meetings last October in Minneapolis, can now obtain a copy of the proceedings by addressing the Executive Secretary, Edwin Henes, Jr., Milwaukee, Wis.

Dr. Walter E. Donely, surgeon in charge of the Neurological Department at Johns Hopkins Hospital, will deliver two addresses at the Great Northern Railway Surgeons Association to be held at Glacier Park, Montana, on June 29-30. His subjects will be "Surgery of the Cranial Nerves," and "Head Injuries."

The last meeting held by the members of the Sioux Falls District Medical Society at Sioux Falls had the largest attendance of the season. The two principal speakers were Dr. J. J. Barfield, Colorado Springs, Colo., on "Heliotherapy in Tuberculosis," and Dr. T. W. Munce, Sioux City, Iowa, on "Bovine Tuberculosis in Animals."

The regular meeting of the Watertown District Medical Society was recently held at Watertown, S. D. A paper on "Treatment of Diabetes" was presented by Dr. Finn Koren of Watertown, and a paper on "Surgery of the Acute Abdomen," by Dr. E. A. Regnier of Minneapolis. Several guests from the Whetstone Valley District Society were present, among them being Dr. Percy D. Peabody of Webster, President of the State Society, and Dr. A. E. Bostrom of De Smet, State Epidemiologist.

Dr. W. A. Fisher, who is noted for his introduction of the Smith Indian method for cataract extraction, came to Minneapolis recently to visit and see Dr. C. N. Spratt's method for the extraction of cataract. A luncheon was given for Dr. Fisher by Drs. C. N. Spratt and Dr. Archibald E. Wilcox and was attended by thirty of the prominent ophthalmologists of the city. Dr. Samuel Higgins, who read a paper before the Minnesota Academy of Ophthalmology and Oto-laryngology, also witnessed a demonstration of Dr. Spratt's method of operation later in the week.

CLASSIFIED ADVERTISEMENTS

Wanted

Doctor to locate in town of 400 population, big territory, nearest doctor, twenty miles. For further information write A. C. Nelson, Wales, North Dakota.

Notice

The Post Graduate Course of Ear, Nose and Throat Surgery at the University of Bordeaux, France, will commence July 27, 1931. The course is given in the English language. The class is limited to twelve physicians and is offered by Professor Georges Portmann. For information apply to Dr. Leon Felderman, 413 Mitten Building, Philadelphia, Pa.

Attention, Eye and Ear Specialists

Having retired from practice elsewhere, will sell my equipment of instruments, including Microscope, 3000 power, complete box case of operating instruments for disease and deformities of the Eye, Ear, Nose and Throat, very cheap. All sterilized up to date. Plated and ready. You can save \$200.00. Phone Kenwood 0474 or address 2639 Humboldt Ave. So., Minneapolis.

Wanted for Ideal St. Paul Location

Pediatrician, Eye, Ear, Nose, and Throat or practitioner in special line to share office with energetic g. p. long established and very successful, with dentist over flourishing drug store, at Grand and Snelling Avenues. Across from Macalester College, one block from Summit Avenue. Owner will subdivide space about 17 by 20 in second story to suit tenant. This second story is just being built. Space offered, leads off large reception room shared with g. p. and dentist. No chiropractors in building. Call John Fitzgerald, Cedar 1952.

Wanted—Locum Tenens Opening

Physician experienced in general, mine and hospital practice will consider locum tenens opening for doctor desiring to leave his practice protected while absent. Available at once. Licensed in Missouri, Kansas, South Dakota, Montana. State definitely terms of contract in first letter. Address Dr. P. P. Halleck, Denton, Montana.

Position Wanted

Capable young woman, 28 years, wishes employment as technician, nurse's helper or office assistant. Three and one-half years experience in clinics and general duties. Two years training in X-ray laboratory and physiotherapy. Address Box 832, care of this office.

For Sale

A very fine collection of instruments for sale at a sacrifice. Very anxious to sell in order to settle estate. Address Box 833, care of this office.

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EXTRACT FROM THE ADDRESS OF THE CHAIRMAN OF THE COMMITTEE ON PRENATAL AND MATERNAL CARE OF THE WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION*

BY FRED L. ADAIR, M. D.
CHICAGO, ILLINOIS

The Committee on Prenatal and Maternal Care feels very strongly that the mother is the life of the family in so far as child health and protection are concerned. We all realize that there is a wastage of maternal lives due to controllable causes operating in connection with child bearing, and that our country lags behind the civilized world in the prevention of these deaths. While there may be sources of error in the interpretation of comparative statistics, and the situation in other countries may not be as ideal as it seems, nevertheless those who have opportunity of knowing the situation here, realize that the mortality of both mothers and young infants is unnecessarily high. The loss of the mother in childbirth is a disaster, not only to the newly born infant should it survive, but also to the other children in the family, if there be such. Not only are our maternal, fetal, and neonatal death rates too high, but there has been little, if any, decrease in the last decade, which is discouraging.

At present we have annually in the birth registration area, approximately 15,000 maternal deaths, 80,000 deaths of infants under one month, and 85,600 stillbirths. Three-fourths of the maternal deaths are due to the controllable causes, infection, toxemia, and hemorrhage. The fetal

and early infant deaths are due to congenital and hereditary conditions, prematurity, birth injuries, and infections, many of which conditions can be controlled.

The means of prevention and control of maternal, fetal, and early infant mortality and morbidity are, first, the education of the public to expect and demand good and consecutive pre-conceptional, prenatal, intranatal and postnatal care for mothers and infants. It is useless to create the desire unless there is adequate and efficient personnel to supply the demand. This means the proper education and training of a sufficient number of physicians, dentists, nurses, midwives, social workers, and others and that they be properly distributed. It further requires the proper set-up in the form of hospitals, dispensaries, etc., for giving institutional and supplying home care in urban and rural communities to all racial, social, and economic groups.

Before undertaking to discuss the above requirements, it may be well to consider somewhat more in detail the importance of maternal mortality.

Maternal and fetal deaths often go hand in hand. Abortion is undoubtedly the most frequent cause of fetal death, but the extent to which it contributes to maternal deaths is not commonly appreciated. Practically all fetuses born prior to seven months gestation do not survive, so that

*Complete address published in the United States Daily, April 6, 1931.

any such ending may be regarded as premature termination of pregnancy. Such endings are too frequently fatal to the mother. This is shown by some recent statistics from the Federal Children's Bureau covering 7,346 maternal deaths in which the period of gestation is known: 2,381 or practically one-third of the deaths followed an interruption of pregnancy prior to the seventh month. Of these, 59 per cent died from sepsis, while of 4,965 cases dying after pregnancy of seven months or over, 30.8 per cent died from infection and 31.2 per cent from toxemia.

Sepsis was the cause of death of 40 per cent of all cases included in the study. Twenty-five per cent of the deaths from all causes had been preceded by abortion. Of the deaths following abortion, 73 per cent were due to sepsis. Of the deaths following intentional abortion, 90 per cent were due to sepsis, and of those following unintentional abortion 60 per cent were due to sepsis. These figures clearly show that preventive measures are not as effectively used in preventing deaths from sepsis following abortion as they are following later deliveries.

In the future, according to the new International Code for Classification of Deaths, all maternal deaths from septicemia will be classified so as to show those preceded by abortion.

The frequency of abortions and premature labors is much less among those women who seek and receive prenatal care.

In the Children's Bureau's study the maternal death rates from abortion are higher among the negroes than the whites, in urban than in rural districts, and in hospitals than in homes. Eighty-nine per cent of the women whose deaths followed abortions were married. Of the 1,587 abortions for which information was secured as to type, it was found that 50 per cent were induced, 37 were spontaneous and 13 per cent were therapeutic.

It is impossible to estimate accurately the number of abortions occurring in this country. Certain calculations made in Germany indicate that there were about 240,000 abortions in that country in 1911, a proportion of about one in every eight confinements, whereas in 1927 it is estimated that there was one to every single completed pregnancy.

In Russia, with legalized abortion, there has been an increase in legal abortions, which is attributed in part at least to the decrease in secret abortions. Similar conditions apparently exist in other countries.

The so-called therapeutic abortion which is charged with about 13 per cent of the fatalities from abortion in the Children's Bureau's study is

a makeshift and a confession of our medical ignorance, for we should ultimately have sufficient knowledge to save life without destroying it. The alleged social and economic reasons should be possible of other solutions by sociologists and economists working in conjunction with medical scientists.

Abortion, whether intentional or unintentional, is a very serious medical problem, and the increase in the number is doubtless an important factor in the failure to reduce our maternal death rate. Properly collected statistics should in the future clear up this point.

The subcommittee on the education of midwives, has pointed out that the maternal death rate in this country where doctors attend most of the confinements is higher than it is in Europe where well trained midwives furnish the greater percentage of care. Their midwives are well trained while ours are not. Yet statistics in this country indicate that in general the mortality statistics from the cases attended by doctors are not better than those cared for by our untrained midwives. What is the answer? The doctors care for more abortions and more complicated cases, they use more anesthesia, they deliver more cases artificially, they come into contact with more infectious material, and they give, as a rule, no nursing care. In defense, it might be added that the midwife has had, at best in this country, little or no opportunity for education and training. There are only two schools for midwives in this country and they are recent. Until of late the supervision of midwives has been very lax and even now it is adequate in very few localities. The greatest need for midwives is in sparsely settled districts and among the negro population, especially of the South. This means that the midwife question is a local problem. There is apparent need for them in some sections, and provision should be made to educate and train them in established institutions. It is imperative that subsequent to their education they work in the communities and among the people who need their services, otherwise there is no use educating and training them. The midwife should not be recognized as the person to fit into the ideal and ultimate scheme, but only as a stop-gap until the better plan of nurse and doctor, each working in their respective fields, can be evolved and established.

The studies made by the subcommittee on obstetric education of nurses show that the education of nurses in the field of obstetrics has not been adequate. Their education in this branch should have as its objective their preparation for

the complete maternal care of patients in the home and in hospitals. Certain numbers should receive special advantages to prepare them to go into the maternity and infancy field of public health work. Others should receive the necessary education and experience to fit them for supervisors and teachers of obstetrics in hospitals and dispensaries. It is probable that there may be a definite field for a limited number of nurses, especially the colored, to receive thorough midwifery training so that they can act as direct supervisors of midwives under medical direction.

In connection with obstetric nursing and to fill a need in the nursing of mothers and infants, there should be a place for a group of well trained personnel who could supply good nursing care to mothers and infants, at a cost lower than that requisite for the more highly trained registered nurse. This need might be met by a system of hourly nursing such as is in vogue in many of the larger communities or by trained nursing attendants.

It has been reported that the facilities for the education of physicians in obstetrics have not been adequate. The lack has not been so much along the line of theoretical training as it has in the application and especially in the clinical advantage. Many physicians receive no more than undergraduate training. The majority of states and the majority of schools do not require an intern year. From our survey it is apparent that most undergraduates do not receive sufficient practical training in obstetrics. Those who secure the year's training as an intern are as a rule much better equipped, but even here there is not infrequently a lack of sufficient clinical experience in obstetrics.

Provision must be made also for the adequate training of specialists in obstetrics and gynecology. As yet the facilities in this country are too meager to train sufficient men adequately to supply the demand. This special training should cover a period of at least three years following the completion of a rotating internship, and should consist of certain fundamental training in the basic sciences pertaining to maternity and early infancy, with abundant opportunity for clinical training in obstetrics, diseases of the newly born, and gynecology. Many European countries set up separate standards for general practice and for various specialists.

Efforts are being made in this country to require certain standards before a physician is recognized as a specialist in certain fields. Recently there has been formed the American Board of Obstetrics and Gynecology, which expects to issue

certificates to men whom they consider to be qualified for recognition as specialists in this line.

It is necessary in a comprehensive educational program, as it pertains to obstetrics, to provide opportunity and facilities for the education and training of men, not only to become specialists, but also to become educators and investigators along the line of maternity and infancy. This requires certain innate qualities and also a prolonged experience, preferably in association with outstanding men in these fields. It is difficult to place a time limit on such activities, but it is suggested that a minimum time period would extend from five to ten years.

There are other educational features which can be mentioned here only rather briefly. The social workers are very valuable adjuncts in carrying out proper maternity and infancy work. The problem of illegitimacy alone opens up a wide range of activity, which has been inadequately handled from the standpoint of both mother and infant. There has been very little attention given to the proper education and training of these workers along the lines of maternity and infancy. It is also important to see that obstetricians and other medical practitioners secure some idea of the importance of social service to their work and their patients. Probably the most effective way of educating the laity is by personal contact with a well-informed personnel. Numerous methods have been and are being used. The essentials are that the subject matter be accurate, understandable, and interesting; that the methods of dissemination be appropriate, and that those to whom the information is directed be reached. Notable service has been done by numerous local organizations as well as by those of state and national scope in educating the public in the fields of maternity and infancy.

It is noteworthy that none of these national organizations cover the field of maternity as their prime object. The Joint Committee on Maternal Welfare comes nearest to this objective, but its activities have been very limited for economic reasons, and because its purposes have been mainly to interest the medical profession in better obstetrics. It might be well for this Committee, as a nucleus, to enlarge its activities to form an organization which has as its primary object the consideration of the numerous problems surrounding maternity. It is apparent from the study of interested organizations that there is a lack of coördination, and while excellent work has been done, no one has made the development of maternal care its exclusive concern. There should be some non-governmental organization

to bring together and harmonize the activities of the many groups which have a greater or lesser interest in maternity. It should be recognized that each person has to assume responsibility for his own conduct and welfare and that each community must solve its own problems, but many times outside stimulation with sane advice and material help is of enormous value.

Each community knows some of its needs and usually some efforts are being made to meet them. They are not always well directed and are often inadequate, but these efforts nearly always have real merit and should be utilized in perfecting the organization of the work in that community. It should be possible to pull various agencies together so that they could fulfill their part of the general pattern. Infant welfare societies, visiting nurses' associations, hospitals, dispensaries, settlements, medical schools, local nurses organizations, medical societies, and others who are interested in maternity and infancy can be brought together to work out an adequate plan for furnishing appropriate care to mothers and infants during the prenatal, intranatal, and postnatal periods.

Smaller centers of population and rural communities present special problems which will have to be met in various ways. Doctors, nurses, and in some localities midwives are necessary. Local and county hospitals and dispensaries would seem to be essential. The hospital facilities in some areas are entirely inadequate, even if available at all. Those available for negroes are more inadequate than those for the white population.

In all communities there should be the necessary institutions, material, and personnel, be it doctors, nurses or midwives, for furnishing adequate and consecutive prenatal, intranatal, and postnatal care. The studies made by the committee show that at the present time this is not available, and even in communities where it can be had, it is not universally supplied due to some defect in the educational plan, the scheme of organization, or to some lack of care or interest on the part of the potential mother or other individuals involved.

In addition to the routine care the Committee's reports point out that there must be provision for special attention to nutrition, oral conditions, venereal disease, tuberculosis, heart disease, focal infections, and other medical and surgical complications. There should be some selection of cases which may need hospitalization. It is important to avoid emergencies in so far as possible and many of these can be foreseen or diagnosed

early. In the study made by the Children's Bureau there were 1,893 cases past seven months gestation who died in a hospital; 996 of these, or more than half, were emergency cases.

In small communities it is obvious that this care cannot be carried out by specialists, but the general practitioner, who is the backbone of the medical profession, can see that it is very well done if the proper organization and facilities are at hand.

There are many gaps in our knowledge regarding the factors and causes of morbidity and mortality of the mother, the fetus, and the newly born infant. It is essential to fill these gaps, but we should first strive to see that every mother and infant receives the benefit of the knowledge we already possess. If this is done it will be easy to apply new knowledge as it is acquired.

We know that such factors as race, environment, social and economic conditions, medical care, physical and mental status, period of pregnancy, complications, methods, and grade of care and character of attendant and place of confinement all have much to do with the results.

In the maternal mortality study of the Federal Children's Bureau a report on prenatal care was secured for 5,636 of the cases. Of these, 53 per cent received no prenatal care, and in 72 per cent it was inadequate.

The character of the onset of labor was stated in 6,878 cases for which the period of gestation was reported. It was spontaneous in 4,411 cases; artificial in 1,686 cases; and in 781 cases there was no labor. Why should 25 per cent of these cases have an induction of labor, and 10 per cent be fatal with labor not having even started?

The termination of labor was reported in 6,657 cases in which the period of gestation is given. It was spontaneous in 3,428; artificial in 2,255 cases; and in 974 instances labor was not terminated. Why should there be 30 per cent of the fatalities with artificial termination, and about 12 per cent be undelivered? Nearly one-third of the deaths followed an interruption of pregnancy prior to the seventh month, and in this group almost 60 per cent died from sepsis. There must have been something wrong with the attention given to these mothers, especially when in the whole group of 7,380 deaths 40 per cent died from infection, 26 per cent from toxemia, and 11 per cent from hemorrhage. This makes a total of 77 per cent fatalities from causes which are controllable.

We do not have all the results for the fetuses and infants, but we do know that only 42 per cent of these pregnancies ended in live births.

We have little statistical information relative

to the morbidity of mothers, but probably half of the gynecologic operations are necessary as the result of poor care during pregnancy and childbearing. The causes of maternal morbidity incidental to childbearing are birth injury, infection, and toxemia. Much has been and can be done to alleviate these conditions, and it is only fair to state that, while mortality is taken as the standard for the comparison of results, morbidity though less tangible should also be considered.

We have mentioned the effect of various procedures and events upon the mother and now it is important to state the causes of fetal and early infant mortality and morbidity. In 1929 approximately 31 per cent of the infant mortality in the birth registration area was due to prematurity, congenital debility, and syphilis; 8 per cent was due to congenital malformations; 8 per cent to injury at birth; and 8 per cent to other diseases of early infancy and to unknown or ill-defined causes. The causes which are more or less amenable to management during the prenatal period are prematurity, maternal toxemias, infections, and syphilis, all of which can be controlled in a measure to the benefit of the fetus.

Malformations could only be controlled by pre-conceptional care, and we do not know how to accomplish it.

During the intranatal period much can be done by adequate care to limit the number of deaths caused by suffocation, aspiration, and injury to the central nervous system, as well as in other types of birth injury which do not lead so frequently to fatalities as to morbidity. Injuries to the brain and cord are often responsible for the failure to establish respiration. Infants with birth injuries may be born dead, die soon after birth, live a longer or shorter period with a varying amount of disability, or apparently recover. These injuries are of the utmost importance in causing both mortality and morbidity, and cannot always be avoided. They occur especially in premature infants. They follow after spontaneous labors of a short, violent type; prolonged, hard labors; instrumental deliveries, breech extraction; and even after Caesarean sections.

The postnatal causes of fetal deaths are thermic from isolation or refrigeration, which are particularly dangerous to the premature infants; chemic causes, infections, and disturbances of nutrition. Proper postnatal care should begin immediately with birth and be followed through consistently.

Prematurity can be greatly reduced by proper prenatal care. Syphilis in the fetus could be eliminated by adequate pre-conceptional care. Toxemias can be controlled with the saving of

some infant lives. Infections causing fetal death and disease can be lessened. Deaths from suffocation and aspiration can certainly be reduced, and the mortality and morbidity from birth injuries can surely be diminished. Practically all of the postnatal causes of death could be controlled, if not eliminated. We all admit that our present knowledge is inadequate in many respects, but we make an urgent plea for the universal application of that which we do possess.

We should like to know more about the problem of abortions and the factors producing or leading up to them, whether intentional or unintentional. There is much to learn about premature births and their causes. There are many deaths in fetuses and the newly born which are difficult to explain on clinical or pathological grounds. There is much to learn concerning the effect of various maternal states and diseases upon the fetus.

We know much about infection which takes its toll of mothers and infants, but there are still some unexplained facts relative to susceptibility and immunity which are of considerable importance.

Of the causation of toxemias we are in virtual ignorance though many data have been accumulated.

So much that is lacking in fundamental knowledge is pointed out in the detailed reports of the Committee on the basic sciences, that time and the scope of this address will not permit of detailed enumeration. In anatomy, which is relatively old and more or less stable, there is still much to be added to our information pertaining to the fetus and mother. The pathology of the embryo, fetus, and newly born is still a fertile field for investigation, and the mother presents many unsolved pathologic problems especially in regard to the toxemias. Bacteriology, and especially immunology, would contribute much if a way of preventing maternal, fetal and infant infections could be shown. Physiology with chemistry of various categories is now an actively fertile field in the study of sex and growth hormones. Nutrition of both the pregnant mother and the fetus, and of the lactating mother and infant are problems which will require a vast amount of work for solution.

Eugenics hardly comes within the scope of this conference, and yet many infants are born who are useless or worse in our social scheme, so we would like to know more about hereditary influences and be able to prevent the birth of those who are defective and constitute a burden or menace to society. If we could be certain of our

laws of heredity as applied to human beings, the prevention of the birth of these individuals by stopping the procreative powers of their parents would be a blessing to humanity. It is difficult to know just how far to go with such a program, but we should progress slowly but surely.

In conclusion, it may be stated that the present situation with regard to maternity and infancy is not satisfactory.

To remedy this situation our present knowledge must be generally applied so as to provide appropriate preconceptional care, to insure the proper growth and development of normal parents who reach the reproductive period healthy and free from venereal and other transmissible diseases, and from other conditions which may make child-bearing dangerous to them or the fetus or a hazard to society. These parents must be imbued with the desire to have normal, healthy children in sufficient numbers to perpetuate the best there is in our human race.

Prenatal care of adequate degree must be followed by competent intranatal and postnatal care for the health and protection of both mother and

infant. In order to accomplish these things, it is necessary to have properly trained and educated doctors, nurses, midwives, dentists, social workers, mothers, and laity, who come in contact with the problems of maternity and infancy.

In addition it is necessary that proper organizations be set up in various communities, that the necessary institutions be established and the essential personnel be supplied. Luxuries are not lacking in this country, surely it is not a luxury to prevent morbidity and mortality among mothers and infants. Perhaps we are becoming too ease-loving and self-satisfied and may be losing some of our sense of proportion and ideas of fundamental values.

The doctors individually and collectively should lead in these movements to secure the health and protection of both mothers and infants. We should apply and disseminate our present knowledge, and our basic and other medical scientists should continue, as they will, to push forward so that new knowledge may be secured which will add to the security, improvement, health, and happiness of future generations.

PERIODIC MEDICAL AND DENTAL EXAMINATIONS

By ELMER S. BEST, D. D. S., F. I. C. D.

MINNEAPOLIS, MINNESOTA

As our knowledge of mouth conditions increases we come to recognize the mouth as an indicator of the general well being of the individual.

While it can never be said that in the mouth we shall find evidences of all functional and organic disturbances, yet a careful study of it with a knowledge of what constitutes a normal healthy condition will many times give us valuable information.

In addition, the mouth and throat constitute a field in which arises a high percentage of the infection found in the body. Consequently proper consideration of the patient's interests would demand that from the dentist's standpoint every precaution be taken to keep the oral cavity under supervision and to maintain therein as healthy a condition as possible. Routine oral prophylaxis enables the dentist to keep tab on the crowns of the teeth and the soft tissues, but it does not tell him anything about health or disease around the

roots as all dentists know it so happens that it is right here that trouble generally develops.

Pulps of teeth have the most perverse habit of dying and setting up infection without any alarming symptoms developing that would acquaint the dentist or the patient with what is going on. Protection of the patient's interest and general welfare would seem to indicate that with reasonable regularity an X-ray examination be made of the roots of the teeth. It has been found that once a year is about the frequency with which such a procedure should be carried out.

If such an examination is made at or about the patient's birthday, when the physician is making a general examination, it adds greatly to the efficiency of the procedure, as the dentist makes his report to the physician at the same time checking up the patient, if he happens to be tardy with his physical examination.

The maintenance of a high degree of physical and mental efficiency is only possible where we reduce to a system the establishing of normal health and the early detection of disease.

U. S. INDIAN SERVICE—DEPARTMENT OF MEDICINE AND SURGERY CHEYENNE RIVER SIOUX INDIANS

CHEYENNE AGENCY, SOUTH DAKOTA

Old Agency Hospital Est. Feb. 1, 1895

New Agency Hospital Est. 1915

By DR. LAWRENCE F. MICHAEL

(Concluded from June 1st Issue)

FIRST MAJOR OPERATION:

The real test came early in my hospital venture. A test as to whether the hospital would stand or fail. Briefly, the wife of one of the Indian police was bedridden and had about given up hopes of getting well. A case of necrosis of the ankle joint, diagnosed tubercular, localized. Patient much below normal. Home surroundings not good. Careful examination revealed no general systematic infection. Invited patient to the hospital for observation, many times, finally accepted. Ankle remained obstinate in spite of all that was being done. Discharge foul smelling and joint very painful. Amputation was the only way out, if at all. First I laid my plans before my friend Rev. Ashley who looked with favor on my plan. Relatives, friends and a medicine man, the latter demurring, I was told. The rest in doubt as to my ability to save the woman's life. Husband and wife talked it over for quite a while and it looked as though my proposition was to be rejected and forgotten. The general opinion of those on the outside was that she would die if the foot was removed. She told me of this, and asked my honest opinion. I told her that she had a chance of getting well by the method suggested. Beyond that I knew that unless something was done for her, it would in the end, mean that her chances for getting well, about none. "But don't get scared. I shall do my best for you no matter which way you decide. It is for you to say and I shall respect your wishes. What I have told you I believe to be for you and your family's good. Take your time and if you decide to have this operation done well and good, when you are well, I shall see to it that you are given an artificial limb so you can get around with out little discomfort." Several weeks passed, one morning while making the rounds, she said to me: "My husband and I and some of my friends think that I had better accept your advice and have it all over with. I know that my foot will never get better, I have been sick so long and I am worn out with pain." "All right, that's fine. Don't

worry, I'll give you the best attention that is in me."

She had called my hand. Now it was up to me to prove my ability. No trained nurse and no other trained help to call on for assistance. Just one thing to do and that was to train for the work that was before me. Rehearsals were in order. After a week or so of this, I concluded that all was ready: "Der tage" had come. Rev. Ashley was assigned the task of watching the anesthetic, after I had seen to the first section of it. No time was lost in doing what was before me. Everything worked out splendidly, no hitches or false moves. Record time was made. The need for avoiding shock was imperative. On regaining consciousness she said: "What are you waiting for? Why don't you do it?" "It's done, you are all right." "Thank God and you, now I will get well." And she did. It was wonderful how nature came to the rescue and helped to put her on the way to health. Out of bed in a short time and happy in her release from a bed of invalidism. In due time the artificial limb was ordered and fitted to the patient, and she soon learned to walk without even a cane. As a surgeon my reputation had been made, but it brought me no added compensation from my employer.

Always cautious, always careful, was my professional religion, my early training had been along this line and it has always remained with me. Would I do the same thing again? Perhaps, yes. Perhaps, no. It has always been my fixed policy not to hold out false hopes or make promises that were not likely of fulfillment.

About a year later an Indian woman was brought to the hospital with a compound, comminuted fracture of her ankle. The result of an accident from a run away team. It was a bad looking wound then about twenty-four hours old and had had no attention, except a dirty binding up by the husband. I conjured up all kinds of trouble and suggested immediate amputation of offending member. This was rejected with the agreement that if the injury did not respond to treatment, why then, of course they would consent.

A hopeless task, but to insist on doing what I had suggested would probably result in her being taken away. All right. Cleaned up the wound and gave it all possible attention. Did no good, and it was plain that something radical must be done. Patiently and cautiously the facts were presented and their consent was given. Permit me to say; that at this time I had an excellent knowledge of the Teton Sioux dialect and could hold my own with the best of them.

This patient's path was rather stormy for a few days, but finally weathered the storm and was given an artificial limb the same as the policeman's wife had. This was in the agreement before the operation.

OBSTETRICS:

I was credited with doing the first instrumental delivery on that reservation and possibly in the Sioux country. The situation was desperate. A request for medicine came to relieve a woman in labor, that she had been sick for three or four days, was getting weak and could not accomplish the task. It was about thirty miles from the agency. So I decided to go and see just what was the cause for nature's failure. Nature had gone on a strike. Mother exhausted and on verge of collapse. After several hours of coaxing and explaining, permission was given and the delivery made without any particular trouble. To them a wonderful thing. Woman's recovery uneventful.

While stationed in New Mexico I had an interesting experience in this line, very much out of the ordinary. On the Jicarilla-Apache reservation; the Indians and Mexicans occupy the same land. Both very backward and superstitious. The call was to the home of a Mexican resident of the reservation. I was asked to come "Muy pronto" come quickly, and informed that a woman was in labor and had been for several days and could not live unless something was done for her right away. On arriving at the home of the patient, I found several Mexican women in attendance on the sick woman. Her bed was on the dirt floor of the one room abode house. An examination revealed a mal-presentation. The midwife had brought down the left arm of the baby and had about pulled it off, and the patient on the verge of convulsions. Nature had quit the job. Not a very pleasant situation to be confronted with and no help within fifty miles, high priced at that. My knowledge of the Spanish language was rather limited and their knowledge of English was about the same. I told them what had to be done, the best I could; version. The answer: "Si si, senior doctor, esta bueno." "Yes, yes, doctor that is all right." When ready to give

the chloroform, I told those present and the patient in English, that I wanted them all to be brave. The translation was made that I wanted them all to pray. No sooner said than done; all fell to their knees and the woman in labor raised her hands in an attitude of prayer. Well what's happened now I thought. There was no time to ask questions, and the task was completed without incident. The patient rallied nicely and to them never had such a miracle been performed. The baby was dead and had been for several days, from indications. Recovery uneventful. Nothing would do but I must stay for breakfast, they killed the fatted lamb and I waited to eat with them. "We are all so glad, thank God and you for saving this poor, sick woman's life."

Several days later I learned from the Post Trader, why the prayer. "What in the world did you have the Martinez family to pray when you were up there the other morning? You certainly got those Mexicans on your side, they think you are some kind of a miracle man." "Who said pray?" It dawned on me that brave and pray had been misunderstood. Being devout Catholics they looked upon it as part of the ceremony for the relief of our patient. A few days later the husband brought my fee, a very modest one, and with many "gracios, gracias, Senior Doctor." "Thank you, thank you, Mr. Doctor."

AGAIN THE SIOUX:

My hardest trip in the Sioux country came during the winter of 1909-10. It was a cold and snowy winter as I now recall it. I was the officer in charge of the reservation of the Cheyenne River Sioux. A payment was due and the Indians needed the money very badly. The route lay along the Missouri river to the mouth of the Moreau river. Up the Moreau to the mouth of Thunder Butte Creek, sub-station. We had then been out five days and remained here an extra day to rest our horses for the trip across the west end of the reservation to Cherry Creek. Snow and cold remained with us with a vengeance. Our next stopping place Bear Creek, about eighteen miles distant. We started at eight in the morning and landed at four in the afternoon. Cold and hungry. We were well cared for at this point and after a good night's sleep on our way to the Cheyenne river at the mouth of Cherry Creek; the region where several men rode out into the night never to be seen again, according to the tales told by old timers and some not so old. This took another day and at sunset we sighted our destination. A pleasant sight, it meant a warm bed and good food. I shall always remember that sight, slin, straight, columns of smoke going

up from the chimneys and the Indian camp. After finishing up our work there we were on the last leg of our journey, down the Cheyenne river to its mouth. Then up the Missouri to the Agency. We had been away from home thirteen days. The funds for the disbursement were in the form of unsigned checks, signed by me on delivery to the person whose name appeared on the payroll. Not much chance for a holdup man to make a cleaning.

CANTON ASYLUM FOR INSANE INDIANS:

Let me tell briefly of the founding of the Canton Asylum for Indians. While among the Poncas a pathetic and distressing thing happened, that had made a deep impression on me. A young Indian had been found dead on an isolated part of the reservation, partly devoured by coyotes. On inquiry, I was told that he was an epileptic and mentally irresponsible, yet harmless. It further developed that his friends and relatives were more or less afraid of him on account of his affliction. That there should be some place for the care of this class of patients, and where they could be given proper care and attention, was apparent.

On coming to the Dakota country among the Sioux, this same condition was quite perceptible. There were several cases of epilepsy and also others of mental illness that should have proper care in some institution. An effort was made to get them confined in one of the State institutions, but we failed, on account of no room. White patients had the preference, and the amount allowed for such patients by the Government was not looked upon with much favor, and Indian patients regarded as generally undesirable.

During my absence from the Agency to one of the sub-stations word came to the office that a young man, an epileptic and slightly deranged mentally, had been severely frosted, and was being taken care of at the camp fifty miles away. It was up to me to give this case attention. On arrival, an inspection revealed that he had been badly frozen. Feet badly swollen and the hands not quite so severely. His friends readily consented to his removal to the Agency hospital, and we took him with us on our return trip home. It was a long and hard seige. Part of one foot had to be removed and all of the toes on the other foot. His hands fared better. The patient was a severe trial to all of us. When he was well enough to be sent away, he went to the Agency guardhouse for safe-keeping. At every opportunity he would desert and come to the hospital and ask to be permitted to stay. It was pitiful to be forced to send him back to the guardhouse,

to me it was heartless, but the best that we could do under the circumstances.

Why not an asylum for Indians? Was the question asked of my good friend, Maj. Couchman. "It's a good idea, write a letter and I'll endorse it and send it to the Commissioner and see what the Indian Office thinks about it." In a reasonably short time we received a reply asking for additional information and to find the attitude of the delegation in congress from South Dakota. All this was done and the suggestion for a hospital or asylum for this class of Indian patients took root.

Employees were prohibited from writing to the Indian Office, except through the office of the Indian Agent, it was, therefore, deemed advisable and expedient that my letter had better bear the Agent's signature, it would carry greater force and fuller consideration would be accorded the proposition. The same general plan was followed in all subsequent correspondence. The matter of handling the proposition fell to Senator R. F. Pettigrew, the then chairman of the Senate Committee on Indian Affairs. An able representative of his constituents and a true friend of the Indians. The records submitted herewith sustain my assertion. They are authentic being photostatic copies of the committee proceedings and supporting documents.

On page two, of these copies, you will find Maj. Couchman's letter to the Senator and the remarks by him on introducing the subject. This is an almost verbatim copy of my letter to him. Again, on page sixteen the same thing appears in almost the same language, in which the agency physician is mentioned, and his opinion in the matter.

On page two you will note a report from Dr. Fred Treon, then Indian agent at Crow Creek, being a splendid endorsement of the asylum idea. The record also discloses a rather stormy day in committee, however, the general support given by the officers in the field helped to win the support of the objectors. We had the fullest support of the Commissioner, who had been supplied with a full and substantial report showing the urgent need. At that time there were fifty-eight patients that should be in an institution.

Notwithstanding the adverse report of the acting agent of the Mescalero Agency, New Mexico. Rather bombastic and not to the point. It shows what a layman was doing in the way of treatment for the mentally sick. Amusing yet annoying.

On page fifteen, one from a former agency physician of the Cheyenne Agency, who demonstrated that he was unfamiliar with the true con-

ditions, as the records show by the reports from the several jurisdictions.

Bill introduced February 11, 1897, and finally agreed to on January 13, 1899, and the location designated as Canton, South Dakota, providing for an appropriation in the Indian Bill for the fiscal year ending June 30, 1900. For some reason I had the fixed idea that Senator Kyle was the one who had the handling of this matter, but I was misinformed in the case.

This has always been to me one of the outstanding accomplishments of my long service among the Indian people, and a feeling that I had been instrumental in setting the wheels in motion that resulted in that splendid home for the mentally sick.

The original asylum buildings provided facilities for forty-eight patients, which has since been increased to ninety-two. Beginning with a property value of perhaps one hundred thousand dollars and a present value of two hundred fifty thousand dollars. And further plans under way to make this institution modern and up-to-date in every respect with an added expenditure of considerable proportions, this information comes to me from Dr. Harry R. Hummer, the able and efficient superintendent.

May I add to this that it is my earnest conviction that the little hospital at Cheyenne Agency had much to do with the molding of favorable opinion for the establishing of hospitals in later years in the Indian country. It had been demonstrated that such institutions could be made useful instruments if properly and honestly operated.

The last seven years of my service were made up of a varied and at times most exacting duty. I had progressed from Agency physician to that of Indian Agent, boarding school superintendent, supervisor and special supervisor, which really carried the duties of an inspector, only added to these I had health matters assigned to me, during the period above mentioned.

CALIFORNIA ASSIGNMENT:

My last assignment was to California and was my "Waterloo," being a most arduous and exacting duty. It called for a survey of the homeless non-reservation Indians of the entire state, with particular reference to the home surroundings, general health, tuberculosis and trachoma. Few people realize the size of the state of California, with its thousand miles of Pacific ocean forming its western boundary. Valleys and mountains, desert and fertile plains, vast timber stretches and the finest redwood forests in the world. All kinds of weather can be found all along the route. Snow and cold in the winter in the higher regions with orange groves and other semi-tropical trees and

plants in the valleys. Few of the tourists see the real California. It is away from the fine highways in the little valleys and the foot of the mountains. Here it was that I found most of the Indians. Isolated and far away from the beaten paths. They seemed to seek solitude.

From September 1st, 1919 to June 1920, assisted by two fellow employes, and a trusted (?) Ford, we chased the dirt roads and trails to get our data. One of the men assigned to me remained about six weeks the other who came sometime later stuck it out for another month. Too tough for me. Today in the warm valley, tomorrow in the higher altitudes. Quite frequently it would be necessary to abandon our Ford and climb up a mountain side to the cabin of an "original Californian." The mistake I made was by not knowing when I had enough punishment and asked to be relieved as the others had done. I had never laid down on a job and I was determined to see this through, not realizing that I was going to pieces for good.

I shall not try to describe the sordidness, the poverty, found in some of the homes. Old blind people without sufficient food and clothing. Sick, without care or attention. The able-bodied without any gainful occupation in many, many instances. I recall one particularly distressing sight. A man past middle age, paralytic, slight dementia, wallowed in his own filth. This man had money to his credit with an agent, but who had never seen him nor was interested in him, my companion who was with me became violently ill and lost a perfectly good dinner. We demanded immediate relief for this unfortunate and it was granted without any question asked.

My work took me into every county in the State and at the cost of my health, the best asset any man has. I was bankrupt in health without a court to go to for relief. My doctor friends, and others have been very good and kind to me. Rest and absolute calm is what you need. I and my wife and daughter came to California. The climate has been good to me and in a small way have been able to keep on my feet and out of doors most of the time. For all of which I am duly grateful. Had I been granted my wish; and my application for release from my Indian Service work been granted, when I had an offer to join the Army Medical corps during the World War, and had this same thing happened to me, my compensation would now be better than what it is. No use to cry over spilled milk. No use to live too much in the past. Today, will be yesterday, tomorrow.

I must bring this to a close, but before doing so, permit me to write into the record a letter from the Hon. Charles H. Burke, Commissioner

of Indian Affairs, at the time I tendered my resignation, two years after I had blown up. The Office was most gracious to me and carried me on the roll, without pay, for that period. As one remarked, "what is the constitution between friends." I prize this letter very much. I also have a letter from the former commissioner, Hon. Cato Sells, along the same line. It brings a memory and the satisfaction of a service well done.

"COPY, IN PART:"

Washington, D. C., Aug. 31, 1922.

I am in receipt of your letter of August 10, inclosing your resignation as Special Supervisor in the Indian Service, this will be formally accepted in another letter.

I note with special regret that the condition of your health makes this step advisable, and I cannot allow the incident to pass without a word of appreciation touching your long and efficient service.

In referring to the many evidences revealing the character of your work, including comment upon your abilities by worthy veterans in our Service, I am impressed that yours has been an unusual record in which faithfulness, conscientious endeavor, and firm loyalty to administrative policies are prominent in thirty years of successful activity. It is a real pleasure to review public work of this character.

Your many friends in the Office and Field will join with me in hoping for your speedy and full recovery, and for many years of usefulness where your qualifications can be most effective.

Cordially yours,

Signed Chas. H. Burke,
Commissioner.

Dr. L. F. Michael,
Special Supervisor Indian Service.

I was a House member of the South Dakota State Legislature, 1906-7, a rather stormy period in the State's history.

I was particularly interested in the matter of appropriations for the State's educational institutions, and other needed appropriations, which I always supported.

The medical and dental profession expressed appreciation for services rendered by me, this is particularly true of the latter, some vicious piece of legislation had been introduced in the interests of undesirable dental practitioners.

I am a member of Ponca Lodge No. 83, A. F. & A. M., South Dakota Consistory No. 4 (Scottish Rite) Aberdeen, also Yelduz Shrine located at the same place.

I am sending this to you my dear Dr. Cook, if it merits any consideration or fills any of the needs or requirements you had in mind at the time you

wrote me, well and good. You have my permission to edit, rewrite or do with it as you deem advisable. I think it should be rewritten, if you do, let me have a copy of it, please.

It has been a pleasure for me to live over again and bask in the sun of my once busy life, serving a people whom I learned to look upon with respect and who were worthy of the best I had to give and served them best according to the light and the way I knew how.

The worst offense I have ever been charged with in the Service was this: "He is always on the side of the Indians and gives them the benefit of the doubt." As a tribute to the Indian I knew; a few lines from Charles Sprague, "The Indian," seem apropos:

"Not many generations ago, where you now sit, encircled with all that exalts and embellishes civilized life, the rank thistle nodded in the wind, and the wild fox dug his hole unscared.

Here lived and loved another race of beings. Beneath the same sun that rolls over your head, the Indian hunter pursued the panting deer; gazing on the same moon that smiles on you, the Indian lover wooed his dusky mate.

Here the wigwam blaze beamed on the tender and helpless, and the council fire glared on the wise and daring. Now they dipped their limbs in yon sedgy lakes and now they paddled the light canoe along yon rocky shores. Here they warred; the echoing whoop, the bloody grapple, the defying death song, all were here; and when the tiger strife was over, here curled the smoke of peace. Here, too, they worshipped; and from many a dark bosom went up a fervent prayer to the Great Spirit."

* * *

All this has passed away. Across the ocean came a pilgrim bark, bearing the seeds of life and death. The former were sown for you; the latter sprang up in the path of the simple native. Here and there a stricken few remain; but how unlike their bold untamed progenitors. As a race they have withered from the land. Their arrows are broken, their springs are dried up, their cabins are in dust. Their council fire has long since gone out on the shore. Slowly and sadly they climb the distant mountains and read their doom in the setting sun.

With kind good wishes and sincere personal regards to you and all my good Dakota friends. I am

Sincerely and cordially yours,

(Signed) Lawrence F. Michael, M. D.
January 25, 1930.

The photostats referred to in the article are on file in the office of the Secretary of the South Dakota State Medical Association. Their length precludes their use at this time.
J. F. D. Cook,
Secretary.

This is the seventh of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

By LEO G. RIGLER, M. D.

University of Minnesota

MINNEAPOLIS, MINNESOTA

DISEASES OF THE SKULL

A. General Considerations

In making X-ray examinations of the skull, films in various directions should be made routinely, especially lateral views on both sides, antero-posterior, postero-anterior and basal views. Stereoscopic films are frequently of great value.

B. Normal Anatomy

1. *Vascular grooves.* These are of two types:

- a. Those due to the middle meningeal artery producing narrow, fairly distinct, radiating lines of decreased density, arising near the base of the skull and branching as they radiate out toward the outer portions.
- b. Those due to the diploic veins which are broader, shallower, more irregular in distribution, and much less radiable, varying greatly in size in different individuals. The vascular grooves tend to increase with age and are hardly present in the child.

2. *Sutures.* These appear as saw-toothed, serrated lines of lessened density, being very marked in children and disappearing gradually with age. The occipito-mastoid and occipito-basal are frequently very prominent and should not be mistaken for fractures.

3. *Basal structures.*

- a. The cranial fossae are anterior, middle, posterior. Their floors are well defined. There is a distance in height of 6 cm. from the anterior cranial fossa downward to the posterior.
- b. The alae minor appear best in the postero-anterior view as lines of density extending transversely and obliquely across the orbits.
- c. The alae major appear as straight vertical lines near the outer margins of the orbits and indicate the outer margins of the cranial cavity.
- d. The sella turcica. (See later.)
- e. The petrous portion of the temporal

bone appears in the postero-anterior view as a heavy, dense mass of bone super-imposed upon the facial bones, running horizontally from the midline to the mastoid at its extreme lateral end.

f. The mastoid process. (See later.)

4. *Convolutional markings.* Certain portions of the skull especially the temporal and cerebellar regions show greater thinness than other portions. These are normal. Increased intracranial pressure may produce similar areas of smaller size, throughout the skull due to the pressure of the cerebral convolutions.

C. Fractures of the skull.

1. *General considerations.* Almost all fractures of the vault of the skull are demonstrable on careful X-ray examination. Fractures of the base however may frequently be invisible owing to the complicated structure, the inability to put the patient in the proper position for visualization of the base, and to the superimposition of bones.

It is important to take films with the fractured portion next to the film as distortion of a fracture line because of distance may make it appear just like a vascular groove.

2. *Types of fractures.* Fissured.

- a. These are linear fractures best seen in the vault. They appear as sharp lines of decreased density, their radiability being greater than that of the vascular grooves and about the same as that of open sutures. They tend to run in straight lines, may run transversely to the course of the vessels, show small jagged irregularities within themselves.
- d. Diastatic. A fracture may pass into a suture opening it up wide, making it much more radiable, and straighter than normal. Often the fracture line can be traced beyond the suture.
- c. Stellate. These appear as a number of fracture lines radiating from a central larger area of decreased density.

- d. Depressed. An area of increased, irregular, non-homogeneous density appears, along one edge of which can be seen a number of fracture lines.
- e. Basal. A fracture line in the vault can often be traced into the base especially into the mastoid process. Films taken to show the base of the skull (occipito-mental position) may demonstrate one or more fracture lines in the base.

3. *Fractures of the facial bones.*

- a. Mandible. This is most commonly fractured. Usually fracture line is easily seen. Fractures about the condyle may be difficult to make out because of superimposition.
- b. Nasal bone. These can be demonstrated readily by special technique giving soft tissue detail. Usually there are multiple fissures.
- c. About the face. Fractures of the zygoma, maxilla, malar bone are seen. The latter two frequently show cloudiness of the maxillary sinus due to hemorrhage into it.

4. *Value of X-ray examination.* In any case suspected of injury to the skull, thorough roentgen examination should always be made. Frequently a fracture will be demonstrated although the clinical findings do not suggest it. Great care, however, must be exercised not to mistake a normal marking for a fracture. On the other hand, the failure to demonstrate a fracture in the roentgenogram does not rule it out.

D. *Diseases of the Skull Itself*

1. *Syphilis.* This produces multiple, ragged areas of lessened density tending to involve the outer table with or without bone production or periostitis. It is usually in the frontal bone where a marked defect of bone may be present. It is difficult to distinguish from osteomyelitis.

2. *Osteomyelitis.* It is comparatively rare, usually in the frontal bone, often extending from the sinuses, and does not produce new bone as much as in other bones.

3. *Tumors.* All the usual tumors occur especially metastases from carcinoma of the breast producing irregular, multiple areas of lessened density tending to involve the inner table. Multiple myeloma is also common and produces numerous, rounded, small defects.

4. *Hyperostosis.* This is an irregular area of increased density in the frontal bone occurring usually in old women. It gives a wavy appearance. Increased density of other bones of a smooth regular character may also occur.

5. *Abnormalities of growth and of sutures.*

Changes in the time of closure of the sutures may produce:

- a. Oxycephaly or turret-head, a high, narrow skull, showing convolutional markings and marked depression of the middle cranial fossa.
- b. Scaphoid head, a long, flat skull.
- c. Assymetry of head.

E. *Intra cranial conditions*

1. *Increased intracranial pressure* from any cause gives:

- a. Increased convolutional marking, being areas of decreased density in the inner table resembling finger marks.
- b. Spreading apart of the sutures.
- c. Loss of vascular markings.
- d. Pressure erosion of the structures at the base of the skull.

2. *Brain tumors* at times only give:

- a. All or some of the signs of increased intracranial pressure.
- b. Localized changes in the vascular markings.
- c. Localized erosions and deformities of bones especially:

- (1) Sella turcica — opened up, depressed, erosion of posterior clinoid process.
- (2) Erosion of ala minor.
- (3) Erosion or depression of petrous portion of temporal bone.
- (4) Enlargement of internal auditory meatus (acoustic tumors).

d. Calcification in the tumor may identify it.

e. Displacement of a calcified pineal gland from its normal position in the mid-line.

3. *Ventriculography and Encephalography.* Injection of air or lipiodol is made either by trephining the skull and puncturing through the brain or by injection into the spinal canal. By this means the ventricles may be shown clearly in contrast with the brain. Enlargements due to hydrocephalus, localized contractions due to tumors, distortions and displacements due to tumors, and the outline of the tumor itself if it protrudes into the ventricle may be seen.

Injection of air into the sub-arachnoid spaces may give clear visualization of the convolutions.

Injection of lipiodol into the ventricles may outline them as areas of increased density rather than decreased as with air. This method is not so satisfactory.

4. *Calcifications in the cranial cavity.* These are very common and include the following frequently:

- a. The pineal gland—a small rounded density above and behind the sella turcica, in the midline and of no clinical significance.
- b. The falx cerebri appearing as a long thin area of density in the midline.
- c. Anywhere in the dura mater as plaques of irregular density.
- d. The choroid plexus—an irregular stippled area of density, usually superimposed upon the roof of the orbit.
- e. The basilar and internal carotid arteries. The former appears as a rounded dense area just behind the sella, the latter apparently within the fossa itself.

5. *Value of X-ray examination.* Roentgen examination in intracranial conditions is frequently of no value and negative findings are of no significance. Positive findings, however, may be of great value in establishing the diagnosis and localizing the condition.

F. *Sella Turcica*

1. *Normal appearance.*

- a. The hypophyseal fossa appears as a rounded depression in the middle cranial fossa of the skull, well seen in the lateral view but poorly seen in all other positions. The anterior clinoid process projects above and in front. The posterior clinoid rises upward as a thin line of density behind. The sphenoid sinus is usually seen below.
- b. Size. This varies considerably. When smaller than the usual normal the significance is doubtful. Increases in size of appreciable degree are of importance.
- c. Variations. These consist chiefly of calcification of the various ligaments (folds of the dura mater) within and behind the fossa.

2. *Pathological findings.*

- a. Tumors of the pituitary gland and acromegaly. A marked increase in size may occur, the floor is depressed compressing the sphenoid sinus, the clinoid processes are separated more widely, and erosion of the whole bony structure may occur.
- b. Extra-sellar tumors and increased intracranial pressure. The posterior clinoid process tends first to be thinned out, then disappears. The sella is displaced downward and enlarged.

G. *The Para-Nasal Sinuses*

1. *Development.* The maxillary sinuses appear first as two small triangular areas of lessened density in the maxilla. They begin to be

clearly visible within the first year and are very distinct at two years. The ethmoidal cells then appear and lastly the frontal sinuses which may be absent up to the twelfth year. The sphenoids develop about the same time.

2. *Normal appearance.*

- a. The maxillary sinuses are triangular in shape, have a density which is even less than that of the orbits, should be equal in density on both sides, and show prolongations down into the alveolar processes. In certain positions they are superimposed upon the shadows of the posterior ethmoidal cells, the petrous portion of the temporal bone, the first cervical vertebra.
- b. The ethmoidal cells are a group of clear spaces surrounded by thin septa of bone lying between the medial wall of the orbit and the lateral wall of the nose.
- c. The frontal sinuses are areas of lessened density in the frontal bone, their density being somewhat greater than that of the orbits and dependent on the thickness of the frontal bone. Their form is variable, the two frontals differ in size and shape, frequently one or both are entirely absent, and they often show numerous septa running through them.
- d. The sphenoid sinus is a clearing out of the sphenoid bone lying just inferior to the floor of the sella turcica and visible only in the lateral and special positions.

2. *Technical considerations.*

- a. Postero-anterior films in the chin-nose (Waters-Waldron) position reveal best the maxillary and frontal sinuses.
- b. Postero-anterior films in the nose-forehead position reveal best the ethmoidal cells, somewhat the sphenoid and frontal sinuses, poorly the maxillary sinuses.
- c. Lateral films indicate the depth of the frontal sinus, the thickness of bone covering it, the condition of the ethmoidal cells and sphenoid sinuses.
- d. Occipito-submental films reveal the two sphenoid sinuses separate from each other.

3. *Pathological changes.*

- a. A dense shadow replacing the normal air content of the sinuses usually indicates pus or granulations.
- b. A thickening of the margins of the sinus indicates a chronic sinusitis—a thickening of the mucous membrane.
- c. Haziness of the margins with loss of

structure of the bone, especially in the frontals, indicates osteitis associated with sinusitis.

- d. Dense localized areas, rounded, projecting into the lumen from the wall usually indicate polypi or mucoceles.

4. *Iodized oil injections.* For purposes of accurate study in cases of chronic sinusitis with or without polypi or mucocele, or in cases of tumor, the injection of an opaque medium, preferably iodized oil is of value. In the study of the sphenoid sinuses it is of especial importance. Displacement of the oil by tumor, thickened mucous membrane, polypi, or mucocele, produces a characteristic defect in the shadow of the sinus, which, with the opaque medium in it, is normally denser than the surrounding tissues.

5. *Value of X-ray examination in sinus disease and causes of error.*

- a. X-ray examination is far more accurate than trans-illumination.
- b. Routine X-ray examination reveals many cases of unsuspected sinusitis both in children and adults.
- c. Acute sinusitis usually gives a distinctive shadow. Lack of density may occur, however, if the sinus has just been emptied; while filling up may again produce the density.
- d. Chronic sinusitis without polypi or osteitis may be of little significance as a healed sinusitis may give positive X-ray findings.
- e. In very young children only the maxillary sinuses need be studied. In adults all sinuses should be studied.

H. *The Mastoids*

1. *Development.* Practically no cells are present up to the second year so X-ray diagnosis is of little value. The tympanic antrum is large but is very difficult to visualize. Three types of mastoids develop:

- a. Large-celled pneumatic type.
- b. Small-celled pneumatic type.
- c. Infantile type with few or no cells and practically no air.

2. *Normal anatomy.* A film of the mastoid process should show the following anatomical landmarks from anterior to posterior: the root of the zygoma; the temporo-mandibular joint; the external and internal auditory meati appearing as rounded areas of lessened density superimposed upon each other; the tympanic bone and the tegmen tympani above it separating the process from the cranial cavity; the tip of the mastoid; the body of the mastoid with most of the cells appearing as small air filled spaces of

low density surrounded by thin septa of bone; the lateral sinus, a longitudinal area of lessened density running up through the mastoid and curving posteriorly.

3. *Technical considerations.* Both mastoids should always be taken for comparison. The technique must be exceptionally good, a very small cone and a fine focal spot being used.

4. *Pathological changes.*

a. Acute mastoiditis.

- (1) Obliteration of the external auditory meatus is present.
- (2) General haziness over the whole mastoid area occurs (movement during exposure must be ruled out).
- (3) Loss of the air spaces due to filling with exudate may occur.
- (4) Destruction of cell walls, i. e., loss of the thin septa to a lesser or greater degree is next. This must not be confused with a large cell. The latter can be ruled out by its sharpness of outline and low density and by comparison with the normal side.

b. Chronic mastoiditis.

- (1) Sclerotic mastoid. The cells are absent, the bone is very dense, the sinus appears clearly, the edge of the sinus is very dense. This must be distinguished from the infantile type of mastoid by comparison with the normal side.
- (2) Irregularity of the process, with some areas of lessened density within may occur.
- (3) Mastoid abscess. This gives a large ragged area of rarefaction, not sharply defined.
- (4) Cholesteatoma. This gives a large somewhat irregular, but sharply defined area of greatly lessened density in the body of the mastoid usually connected with the auditory meatus.

5. *Value of X-ray diagnosis.*

- a. The diagnosis of either acute or chronic mastoiditis can be made with great certainty especially if it is one-sided.
- b. The type and extent of the pathology can be made out.
- c. The extent of the mastoid cells (to guide the surgeon) can be determined.
- d. The condition of the lateral sinus can be determined with regard to the thinness of its wall, perisinus abscess, relationship to the mastoid process.

CLINICAL PATHOLOGICAL CONFERENCE

By E. T. BELL, M.D.

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the *Journal-Lancet* is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1760.

The case is that of a primipara, age 27, whose last menstrual period was March 1, 1930. She was due to deliver the first week in December, 1930. She was seen by a physician for the first time in May, at which time the urine showed a trace of albumin. In August, urine examination again showed a trace of albumin. From that time there was a steady increase in the amount of albumin in the urine. Blood pressure in the latter part of August was 118/70.

One week before death her urine showed 3+ albumin, a few red blood cells, and hyaline and a few granular casts. Blood pressure was 170/108. Two fetal hearts were heard.

She was admitted to a hospital November 20 and was given castor oil and quinine to induce labor. Labor pains began but they were ineffective. Three days before death the cervix was dilated artificially and the patient went into labor. The head became engaged. Only one fetal heart was heard at this time. This was heard on the right side. It was presumed that twins were present and that one had died. The patient's blood pressure dropped to 110 systolic. She developed r les in both chests and became very cyanotic. Her condition grew progressively worse and she died, undelivered, November 25, 1930, at 7:30 A. M.

Post-mortem report. Pleural, pericardial, and peritoneal cavities normal. The heart weighs 350 grams. A fresh mitral rheumatic endocarditis is present. No pneumonia. The spleen weighs 350 grams; soft pulp. Cloudy swelling of the liver; no hemorrhages. Kidneys 200 grams each; pelvis moderately dilated; surfaces smooth; on section the cortices are pale. Microscopic examination of the kidneys shows acute glomerulonephritis.

The uterus contains one nearly full term fetus, partly macerated and lying in the R. S. A. position. Another fetus of the same size is partly delivered, the head being outside the uterine cavity; this is also somewhat macerated. Two placentas are present, one on the right and one on the left side of the fundus of the uterus.

Diagnoses. 1. Twin pregnancy with intrauterine death of the fetuses. 2. Acute glomerulonephritis. 3. Acute mitral rheumatic endocarditis.

Comment. This is not a true toxemia of pregnancy, but represents an infection occurring early in the pregnancy, which gave rise to acute rheumatic endocarditis and acute glomerulonephritis.

Autopsy—30—1969.

The case is that of a girl, 14 years old, who was admitted to hospital October 13, 1930. She had been well up to two months before when she developed some pains in both shoulders. These would come and go. About October 1 the pains became more severe. October 5 she developed tingling and prickling sensations in both feet; these extended to the hip joints. October 7 there was marked weakness in both legs. About midnight she got out of bed to go to the bathroom; her legs gave way under her, she fell, and had to be carried back to bed. The next day she could not move her legs at all. Had electric shock sensations passing down both sides of the body, through the legs and thighs. October 11 all sensations completely gone below the hip joints. October 13 developed very pronounced stiffness of the neck. Had some headache. October 12 developed tingling sensations in both hands, present on admission. Also developed urinary retention.

Examination showed complete paralysis with loss of sensation to touch, pinprick, temperature, as well as all reflexes up to the level of the second dorsal segment; the line of demarcation was very sharp. Sensations normal on dorsal surfaces of both arms; on the ventral surface there was loss of temperature sense except in both palms where it was still somewhat present. She moved her arms freely but there was definite weakness in the grip of both hands. Examination otherwise negative except for marked rigidity of the neck. Respiration was entirely abdominal, there being no movement of the chest wall itself.

Temperature on admission 102°; it ranged between 100° and 102° for several days, then between 98° and 101°, and October 23 and 24 it was 101° to 103.8°. After that it varied between normal and 100.5° except on several occasions when it rose to 103°. During the week of November 10 it ranged between normal and 101°; the following week it remained normal and stayed normal to December 1, when it suddenly started rising to 104°; on the sixth it was 106°; after that it was around 105° to the time of death. Pulse rate was around 100.

Urine at first was negative except for a few faint traces of albumin. October 18 it showed 2+ albumin and 2+ pus cells; it then was negative to November 1 when it showed albumin + and pus cells 2+; on November 25 albumin + and pus cells 3+. Specific gravity 1,006 to 1,021. Blood October 14: 11,000 leuco-

cytes; October 20, 80 per cent hemoglobin, 13,000 leucocytes; October 24, 8,000 leucocytes.

Soon after admission a neurologist supported the diagnosis of acute ascending paralysis with a very grave but not hopeless prognosis.

Patient had to be catheterized six times a day on account of an enormous urinary secretion; the bladder would be distended with 500 to 700 c.c. of urine each time. Her excretion was around 3,000 cc. per day, generally with output greater than intake. After about three and one-half weeks the amount gradually dropped to about 1,000 cc. in 24 hours. October 16 spinal puncture was attempted; no fluid was obtained. October 17 stiffness of the neck was more marked; the anesthesia seemed to be less for a distance of about three inches in the back; the grip of the hands seemed to be stronger. October 20: less rigidity of the neck; definite improvement; breathing was not quite normal (thoracic in character). November 3 complained of peculiar distressing pains in the legs and rectum, was very restless, developed plantar reactions in the feet, a definite positive Babinski on the left; November 12 strong positive Babinski on the left, weakly positive on the right. A pronounced weakness in the left hand; fairly good sensation to touch over the entire back as far as the iliac crest posteriorly and laterally. November 15 patient's condition worse; excruciating pains in legs and arms; restless; sensations on trunk about the same; fairly good to the twelfth thoracic segment; some involuntary movement of the toes of the left foot; breathing entirely diaphragmatic. Decubital ulcers developed on both hip joints and iliac crests; these extended deeper and deeper. Lost all desire for food and liquids; had to be forced to take water; lost weight and strength; temperature continued high; small rectal feedings were retained fairly well.

December 25 became quite comatose; breathing very rapid. Developed definite bronchopneumonia. Examination impossible because of extreme hypersensitivity to touch and to sound. About December 10 she lost complete use of both arms and could barely turn her head from side to side. About this time marked twitching in the muscles of the face showed some irritation of the cranial nerves. The course justified the diagnosis of acute transverse ascending myelitis.

Post-mortem report. Examination limited to the spinal cord. A soft tumor is found underneath the erector spinæ muscle on the left side in contact with the laminae and spinous processes from the second to the sixth thoracic vertebrae. The tumor penetrates between the third and fourth vertebral laminae and surrounds the dura in the region of the second to the sixth thoracic segments. A small portion of the tumor has also extended between the spinous processes and lies on the right side of the spine. The tumor mass does not penetrate the dura but has caused compression and destruction of the upper thoracic cord. The spinal cord at the site of the tumor is soft and necrotic and almost completely destroyed. Sections of the cord above and below the level of the tumor show marked degeneration of the tracts. The tumor is undifferentiated sarcoma of round cell type.

Diagnosis. Round cell sarcoma of fascial origin which has arisen posterior to the vertebrae and extended into the spinal canal, causing pressure on the spinal cord.

Comment. The tumor was not recognized clinically.

It was not visible on inspection but could be palpated through the skin and muscles. One of the tumors giving rise to the clinical picture of cord tumor is of this type, that is, a fascial sarcoma which penetrates the spinal canal from the posterior aspect.

Autopsy—31—26.

A male infant, six months old, admitted January 1, 1931, and died January 5. Three and one-half weeks before admittance the child took cold and shortly afterwards developed otitis media. Paracentesis was done three days before admittance. On admittance the chief complaints were labored respiration and slight cough.

Examination showed a well developed, well nourished infant with cyanosis and rapid, labored breathing. Both ears were discharging a purulent material. The throat was reddened. Respiratory excursion restricted on the left. Dullness over the lower lobe of each lung posteriorly with scattered râles. Heart enlarged to both left and right. The abdomen was distended. January 3 increased cardiac dullness. Scattered râles over the left lung; bronchial breathing and dullness over the right base. Marked abdominal distension. Diffuse enlargement of the heart seen in X-ray. Widening at the base of the heart suggested thymic enlargement. X-ray therapy over the thymus. January 5 rigidity of the neck developed. Spinal puncture was done; the fluid was cloudy, showing many pus cells and pneumococci. Urine: faint trace of albumin. Blood: hemoglobin 67 per cent; leucocytes 40,450 with 75 per cent polymorphonuclears, 24 per cent lymphocytes. Death January 5.

Post-mortem report. The right pleural cavity contains 50 cc. of cloudy, greenish fluid. There are some soft pleural adhesions. The left pleural cavity contains a similar exudate. A purulent pericarditis is found. The heart weighs 53 grams; it is covered by purulent exudate. (Note: the widening of the cardiac area was evidently due to pericardial effusion.) No areas of pneumonia are found in the lungs; there is some atelectasis. Cloudy swelling of the liver and kidneys. The thymus weighs 13 grams (subnormal weight). Purulent meningitis found with exudate heaviest over the base of the brain. Both mastoids are filled with pus.

Diagnosis. Pneumococcic meningitis, pleuritis, and pericarditis, following suppurative otitis media.

Comment. Suppurative otitis media is a frequent cause of death in infants. The infection spreads rapidly to the meninges and into the blood stream.

Autopsy—30—1693.

The case is that of a white female, 31 years of age, admitted to hospital May 29, 1930, complaining of weakness, swelling of the neck, fever, and abdominal discomfort. She stated that six weeks before admission she noticed loss of strength, easy fatigue, and swelling of the anterior part of the neck. April 10, 1930, she developed multiple boils over the body and face; she consulted a physician and was told that she had a fever. This persisted for two weeks, sometimes as high as 101°. As the fever subsided the swelling in the neck subsided also. Weakness became progressively worse; two weeks before admission she developed abdominal distress, not painful but more a sensation of fullness. She saw that her abdomen was enlarging at the same time. Measles, chicken pox, and scarlet fever in childhood. Fainting spells in childhood considered to be epileptic convulsions with frequent repeated attacks since that time to date. Menstrual periods were irregular. Family history showed that her father died of

carcinoma of the stomach; her mother of "tumors of the stomach."

Physical examination revealed a palpable thyroid gland; the left diaphragm higher than the right; mediastinal central dullness; a systolic precordial murmur; blood pressure 118/60; moderate distension and tenderness of the abdomen; a tender mass over the entire left abdomen, suggesting an enlarged spleen. The liver edges were palpable 4 cm. below the right costal margin; questionable dullness on percussion over the left flank. There were numerous ecchymoses over the chest, neck, arms, and legs, varying in size from 2 cm. to 5 cm.

Urinalysis on admission: specific gravity 1022; no sugar or albumin; negative urinary sediment. These findings remained essentially the same until the time of exitus. Blood on admission: hemoglobin 80 per cent; white cells 1,850 (checked); polymorphonuclears 66 per cent, myelocytes 6 per cent, monocytes 6 per cent, eosinophils 2 per cent, lymphocytes 20 per cent. Bleeding time three minutes; clotting time seven minutes, thirty seconds. Platelet count 93,000. Wassermann negative. Stools negative; no blood. Blood calcium 12.5 mg.

The patient was not acutely ill on admission but she complained continuously of abdominal pain. X-ray examination showed moderate cardiac enlargement of the mitral regurgitation type. It was thought that there was either a small effusion or adhesions in the lower left pleural cavity. On June 13 gastrointestinal x-ray study showed nothing but gaseous distension of the colon. The bones of the spine and pelvis were negative. The diaphragm was elevated on both sides, especially the left. On June 15 the patient first developed nausea, and vomited repeatedly. There were similar attacks of nausea and vomiting throughout her stay in hospital. There was an occasional epileptic seizure noted with foaming at the mouth and tonic and clonic muscle contraction. There were also two similar convulsions on June 22.

On June 10 blood culture gave Gram positive cocci in pairs and small short chains. June 13 liver function test showed 8 per cent of dye retained after 30 minutes and 4 per cent after one hour. This indicates little or no liver injury. Icterus index was eight units. On June 17 fragility test: hemolysis began at .38 and was complete at .34 (normal .42 to .38). On June 19 fasting gastric analysis showed free HCl from 10° to 19°; no lactic acid.

June 27 it was decided that the patient had a splenomegaly of uncertain origin. Leukemia was apparently excluded by the blood picture. The diagnosis was either Banti's disease or Laennec's cirrhosis of the liver. On this day the spleen was removed and found to be seven times the normal size. At operation it was noted that there was marked cirrhosis of the liver present. The spleen showed marked fibrosis. There was some free fluid in the peritoneal cavity at the time of operation. Following the splenectomy blood transfusion was given. On July 5 the wound opened and the viscera

protruded. The viscera were replaced and held in position by adhesive straps. An irregular fever developed shortly after the operation and continued throughout the patient's life. The urine was normal at all times.

On August 16 the liver function test showed 16 per cent of dye retained at the end of one hour. This indicates grade 1 liver injury.

September 25 the blood urea nitrogen was 26.3 mg. October 10 an incision was made into the cul de sac of Douglas; some ascitic fluid escaped but no pus. October 13 the icterus index was 40 units. Liver function test showed 8 per cent of dye retained at the end of 30 minutes. This shows no special injury to the liver.

October 15 bilirubin and urobilinogen were found in the urine. Patient developed a phlebitis in the left leg which cleared up by the end of October. September 24 the patient became irrational. Death November 14, 1930.

Post-mortem report. The spleen which was removed at operation showed a marked fibrosis. This form of chronic splenitis is found in Banti's disease as well as in certain cases of cirrhosis of the liver. There are numerous adhesions throughout the peritoneal cavity and there is a small amount of purulent exudate in the pelvis. The omentum is adherent to the lateral abdominal wall and marked collateral circulation is noted through the adherent omentum. There are adhesions between the intestinal coils in many places. About 1 liter of clear yellowish fluid is found in the peritoneal cavity. The appendix is buried in adhesions. Both pleural cavities are practically obliterated by old adhesions.

The heart weighs 260 grams; no disease of any kind is found. Small areas of bronchopneumonia are found in the lungs. The liver weighs 950 grams. It is bound to the adjacent peritoneal surfaces by strong adhesions. Grossly and microscopically it shows a marked cirrhosis of the atrophic or Laennec type. A thrombus is found in the portal vein. There is edema of the mucosa of the urinary bladder. There is no blood in the gastrointestinal tract but there are some enlarged veins about the cardia.

Diagnoses. 1. Cirrhosis of the liver, Laennec's type. 2. Chronic peritonitis.

Comment. There is no fundamental distinction between Banti's disease and Laennec's cirrhosis. In both diseases there is cirrhosis of the liver and fibrosis of the spleen. When the enlargement of the spleen precedes the signs of liver involvement, we usually speak of Banti's disease, but when the symptoms of liver obstruction precede the splenomegaly, we speak of cirrhosis of the liver. In spite of the extreme destruction of the liver, the functional tests usually show very little decrease in the liver function. The peritonitis was probably due to infection following the operation. Splenectomy often prolongs life in cases of Banti's disease or cirrhosis of the liver when the spleen is very large. In this case, however, no benefit resulted from the splenectomy.



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THE DAKOTA JOINT MEETING

The North and South Dakota State Medical Associations held their annual session jointly this year June 1, 2, 3 and 4, at Aberdeen, South Dakota. This was an unusually interesting convention in view of the fact that this was the 50th annual session of organized medicine in the Dakota territory.

The headquarters of the meeting were at the Alonzo Ward Hotel in Aberdeen and the scientific sessions were held at the Sacred Heart School Auditorium.

The scientific program consisted of Dry Clinics each forenoon, and papers were discussed each afternoon of the three days of the meeting.

The North Dakota Academy of Ophthalmology and Otolaryngology held their Thirteenth annual session on June 2, and the South Dakota State Medical Association co-operated with them in their program. The scientific program was intensely interesting, not only did the program include a large number of visiting guests, all of whom rendered fine papers and clinics, but the material itself which was presented was of real practical value and of keen interest to all of the large attendance.

The attendance was a little less than was anticipated but nevertheless those that were there attended all of the sessions religiously and gained a great deal of real knowledge from the papers that were read.

There were many guests at the meeting from Rochester, Winnipeg, Chicago, and the Twin Cities. The local arrangements committee of Aberdeen is to be complimented on the splendid program of entertainment that they put on for their visitors. Among other things were included

a golf tournament, a smoker, theatre party, and a banquet.

All in all, the North and South Dakota Associations are to be congratulated upon the splendid manner in which the whole program was run off.

The transactions, president's addresses and more complete details of this fine convention will appear in ensuing issues of THE JOURNAL-LANCET.

SEWAGE

With increasing density of population, there is continual demand for greater alertness in matters of sanitation. New problems arise that must be solved.

In primitive times offal and excrements were left to be exposed to the action of the elements whereby they were ultimately resolved. As civilization marched on, time and place became such urgent factors that this method of disposal was no longer practical, and man invented a hole in the ground. This ingenious contrivance was but the premature child of estheticism and while it served in a measure to eliminate objectionable sights and odors, it left behind the unsuspected danger from pollution by drainage, and this in turn gave birth to our modern method of sewage disposal. Thus again, the issue was not solved but rather evaded by a more expeditious but unchanged transference to defile more remote bodies of water. It is manifestly fair that the source should be held accountable for such contamination and be required to deliver its sewage in an innocuous state which modern engineers assure us can be done.

The Twin Cities and South St. Paul with her stock yards, are now confronted with responsibility for the menace of dispoiling the Mississippi river. Ever since the erection of the Ford dam, the State Board of Health and the United States Public Health Service have been making a study of resultant conditions and have reported the absence of animal life and free oxygen in the waters from St. Anthony Falls to Hastings. They recom-

mended chemical treatment of sewage. The necessary expense that this would involve is considerable but it can no longer be evaded nor postponed. The question of proportionate responsibility and equitable adjustment of costs and distribution of assessments have been under consideration for some time. There is little hope for an early settlement and yet there are encouraging reports of progress.

As matters now stand, unless Minneapolis builds a separate sewage disposal plant, she may have to submit to the provisions of a legislative act compelling the taxpayers of Minneapolis and St. Paul to pay for the elimination of South St. Paul pollution from the river.

A. E. H.

GOOD WORK IN NORTH DAKOTA

The State Tuberculosis Sanatorium at San Haven, North Dakota, is working at capacity with 222 patients being cared for. Of these 45 are in the Children's Building and as many more adults in cottages.

Porch patients in cottages and infirmary to the number of 96 are each enjoying the comfort of a new blanket with electrically supplied heat which can be regulated by a simple device operated by the patient. These blankets are 36 by 66 inches, with cord attachment and plug, which fits into the wall by the patient's bed.

"Taking the cure" in the open air of winter under evenly distributed warmth, with ear phones furnishing the programs of Columbia and National radio hook-ups, is a most pronounced improvement over the changing from heat to cold offering of the antiquated water bottles.

Relief is experienced too by reducing the number and weight of blankets necessary to keep out the cold, making the electric blanket a real joy, insuring undisturbed rest and thus shortening the period of treatment.

Twenty-eight "contact" cases in the Children's Building attend a grade school in the building, the classes being under the instruction of a highly competent, experienced teacher. Two hip joint cases of ten years in their fixation supports attend classes in wheel chairs.

Mr. J. S. Lamb of Michigan, North Dakota, outfitted the Building gratis at Christmas time a year ago, with a radio which during recreation hours furnishes the children music for their sports.

A new steel tank of 25,000 gallons capacity has just been erected on a steel tower capping a hill whose top is on a level with the highest building, and thus increased fire protection for the patients is assured.

A herd of fifty Toggenburg goats supplies all the milk necessary for the children. The goat's milk is much preferred by them to that from the Holstein dairy, of which latter, however, there is not enough for adult patients and the complement is made up by purchase.

Mrs. Dudley, the teacher, has instituted a bed-time story hour in a large airy recreation room off the school room, where suitable stories are read with the children comfortably disposed about a blazing wood fire grate. Here, in the quiet hour, their youthful minds may indulge in romantic imagination, and construct each his own "Castles in the air."

A. W. S.

DR. F. L. PUFFER

The death of Dr. F. L. Puffer of Bird Island, Minn., has removed from life's fitful scenes Ren-ville county's pioneer physician and one of our most beloved citizens. Coming to Beaver Falls in 1878, he engaged in the general practice of the country doctor, continuing the practice for 53 years. Only two other doctors preceded him in this county, namely, Drs. H. Schoregge, who came to Henryville in 1870, and C. S. Knapp, who came to Cairo in 1871.

The pioneer doctor was an important integral part of the primitive social fabric. He was concerned chiefly with the serious problem of existence, but he was concerned also with the material progress of the country, and with others he labored to control those forces which determine the common destiny. He shared the manners, the customs, and the ambitions of his companions, and his most thoughtful consideration was how to enhance the service he rendered to others.

Dr. Puffer was a true physician, with a proper conception and estimation of the real character of his profession. His doctrine was one of helpfulness to others, and his practice was to give freely of his service to those in need of it regardless of the consequences to him.

The passing of those good old pioneers gives occasion for profound sadness and regret. They were so human, so self-sacrificing, and their lives so in keeping with the best aspirations of the human heart, that we feel their loss most keenly. On the other hand, the opportunity for service came to them as it comes nowadays to very few, and in passing they leave to us a record of service, and a lesson of devotion to duty, worthy of the pioneers, and of lasting benefit to future generations.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.
Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

1931 Health Officers' Dues

Have you paid your 1931 dues in the Health Officers' Association? The only dues thus far received were from members attending the annual conference in May. Three-fourths of the health officers have not yet received 1931 membership cards. Send in your check or dollar bill today. It is embarrassing to select a candidate for "Who's Who" and then find that he is not a member of the Health Officers' Association or that he does not attend any of its meetings. In disregarding this matter, health officers are limiting possible candidates and this should not be the case. The member selected for the second quarter of 1931 will appear on our next page, about July 15th.

Last Call for 1930

This year, particularly, many queries have been received from physicians and hospitals as to the number of births and deaths attended by physicians, the number occurring in hospitals and in which counties physicians were mostly employed, etc. We will therefore make special tabulations of this kind next month. Physicians throughout the state have generally expressed the opinion that fewer physicians were employed for births in 1930 than in 1929 by reason of economic conditions. But reports in some instances indicate that the physicians attending the largest number of births in a community are the most negligent about signing and filing birth certificates. Last month in one of the large cities of North Dakota, thirty-five babies were found to have no birth certificates. Parents believe, and have a right to expect, that when a physician is employed all records are properly taken care of. We are closing all books June 30th and tabulations will begin immediately thereafter. Please send in any 1930 certificates not yet filed so that the statistics prepared for you will reflect true conditions when completed.

Botulism Pamphlet

The widespread interest in North Dakota's recent Botulism experience has necessitated the preparation of a five-page pamphlet on the history of the outbreak. Copies will be sent upon request. Every physician should be fully informed on this subject and be prepared, should an outbreak occur in his community. Write Miss Grace De Long, Agricultural College, Fargo, for information on the best methods of canning fruit and vegetables as a means of preventing Botulism or write the U. S. Department of Agriculture, for Farmers' Bulletin No. 1471.

New Laws

Laws passed at the last session of the Legislature which did not have an emergency clause attached, will go into effect July 1st. Among the laws per-

tinent to physicians is House Bill No. 67 requiring annual registration of all persons practicing medicine and surgery and providing a license fee. Do not overlook this. Another, Senate Bill No. 79, permits merchants five miles from a drug store to sell home remedies and insecticides. House Bill 227 makes some changes in the regulation of tourist camps. These camps are now classed as hotels and must be licensed. The law is administered by the Hotel Inspector.

Weekly Newspaper Articles

Weekly articles released by the Health Department on subjects of interest to the Public Health will shortly appear in newspapers throughout the state. Watch for them. Your criticisms and ideas are invited. If the articles do not appear in your weekly newspaper and you would like to have them, let us know.

Model Tuberculosis Cabin

A bulletin containing plans and specifications for model, collapsible tuberculosis cabin has been prepared by the Sanitary Engineer and copies will be mailed upon request. Instructions for making the cabin are very complete and understandable. Recommend the pamphlet to your tuberculosis patients. It is free.

Immunization

The State Diphtheria Commission, through its Secretary, is compiling a Diphtheria Immunization Progress Report. It is gratifying indeed, to learn that some 20,000 immunizations have been completed since the state wide campaign was launched a few months ago. Several cities and counties have adopted Diphtheria Immunization as a City or County-wide project and many more plan to initiate such a campaign early this fall. Diphtheria in North Dakota is singing its Swan Song to Immunization.

Child Health

Exceptional interest is being displayed in child conferences and clinics this year. More requests have been received than ever before. From January 1st to May 31st 3,147 physical examinations by physicians were given at pre-school conferences and 3,151 physical inspections of school children by nurses. Added to this 11,618 pamphlets on infant and pre-natal care have been distributed.

Work has been commenced on a card index for all deaths filed with the Department. This name index is badly needed. The Department receives daily inquiries as to whether people have died in North Dakota,—perhaps a relative has been missing for years,—and without a card index we are unable to give any assistance. The index will be completed about September 1st.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of April 8, 1931.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 8, 1931. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, DR. J. S. GILFILLAN. There were 47 members and 2 visitors present.

Minutes of the March meeting were read and approved.

DR. A. S. HAMILTON read the following Memorial to DR. W. A. JONES:

DR. WILLIAM A. JONES died at the Northwestern Hospital, January 15, 1931, at the age of 71 years, of which forty-eight were spent in Minneapolis. He was a very active man and in the course of his long life had an important part in many activities. In addition to his private practice, he was for many years a teacher in the School of Medicine at the University; he was on the staff of various hospitals, including a heavy service at the Minneapolis City Hospital for years; he was for thirty years editor of THE JOURNAL-LANCET, and an active member of the State Board of Health for twelve years. In addition to these, he had time to cultivate an extensive acquaintance among medical men, to give many public addresses and to write many articles. If, as Osler put it, the principal centers of a medical life in a city are: The medical school, the hospital, the medical library, the medical society, and the medical journal, then DR. JONES was certainly prominent in every field of medical activity.

His parents were of Scotch and Welsh ancestry. Both his paternal and maternal grandfathers served in the Revolutionary War. His father came to St. Peter in 1854, and his mother in 1858, and both suffered the privations of pioneer life and the horrors of the Indian outbreak of 1862. DR. JONES was born in 1859.

He attended grade school and high school in St. Peter, and when only fourteen years old entered his father's drug store as a clerk and there gained a thorough and practical knowledge of drugs. He later studied medicine at the University of the City of New York, was graduated in 1881, and directly afterward became assistant physician at the State Hospital for the Insane at St. Peter. In 1883 he came to Minneapolis and practiced general medicine until 1886, when, after

his marriage to Annie R. Johnson, of Denver, he went to Europe and took special work in nervous and mental diseases at Berlin and Vienna. On his return to Minneapolis, he began special practice, and soon attained a prominent position in the field of nervous and mental diseases, which he retained to his death.

In his lifetime he held many prominent positions, both local and national. At different periods, he served on the staff of the Northwestern, the Minneapolis City, the Asbury, the St. Mary's, the Swedish, and the Norwegian Hospitals. In 1913, he founded the South Side Sanitarium and maintained it as a private hospital almost to the time of his death.

He was a member of the Hennepin County and the Minnesota State Medical Societies and of the Minnesota Academy of Medicine, and had been president of all three. He was also a member of the American Psychiatric Association, and of the American Neurological Society, and was a charter member of the Central Neuropsychiatric Association and of the Minnesota Neurological Society and was president of the latter. He was an active member of the American Medical Association, was Chief of the Section of Nervous and Mental diseases in 1914, and in 1928-29 served as vice president of the Association.

By the very nature of his calling, a physician is more or less a public character. Throughout his professional life, DR. JONES was deeply interested in the preservation of health and the prevention of disease. On January 1, 1906, he was appointed a member of the State Board of Health and served as such to December 31, 1918, being president from January 10, 1911, to December 31, 1918. During his term of service in the course of some tempestuous activities, he was a loyal supporter of Dr. Bracken as secretary, and particularly so during certain difficulties which arose in the legislative session of 1917, and which resulted in failure to reappoint DR. JONES. The character of his work on the Board is indicated by the statement of one of its officials that he was a masterful chairman, and with his sense of humor, his absolutely frank attitude toward all questions and his prompt action, he was the most accomplished and the most efficient member the Board ever had.

In 1890 he was appointed by Governor Nelson a member of the Board of Trustees of the State Hospitals for the Insane and held this position until 1894.

He was editor of the *NORTHWESTERN LANCET* and of the *JOURNAL-LANCET* from 1901 to 1931 and no one who knew him well could doubt his deep interest in and genuine affection for this publication. The *JOURNAL* catered to the special medical activities and interests of a limited geographic area and Dr. JONES' editorials were its most striking feature. Many medical men have been heard to say that they subscribed to the *JOURNAL-LANCET* for W. A.'s editorials. To most men, the preparation of a series of editorials every two weeks would be a real task. To Dr. JONES it was a labor of love, quickly performed. Without a note at his command, the editorial was dictated as the ideas flowed from his mind, and if it had any further corrections they were made at the hands of the stenographer or the publisher. That he had the confidence of the medical profession in his undertaking is shown by the following list of contributors to the first number: Drs. Frank Allport, James H. Dunn, James E. Moore, H. L. Staples, R. O. Beard, and A. T. Mann.

As a clinical teacher of neurology and psychiatry he was always a favorite among the students, and out of a very ordinary patient he could always make an interesting case. Though never a profound clinical investigator, he could quickly see the outstanding clinical features of his case, and his diagnosis, whether in the clinic or in private practice, though often of the snapshot type, was generally correct. In 1889, he was made instructor in Nervous and Mental Diseases at the Medical School of the University, became professor in 1900, and served as such to his retirement in 1919. During the Great War he again took up the duties of a teacher in the Medical School in the absence of the regular staff, and also served as a member of a medical advisory board during the war.

Dr. JONES had a large collection of books, both general and medical, and in the later years of his life in particular, when he was often confined to his room for short periods, the writer always found him with stacks of books about his bed. Throughout his life reading was his greatest hobby. His medical library he left to the Hennepin County Medical Society to which he had contributed liberally throughout his life.

As a practitioner in functional nervous and mental disease, Dr. JONES was more than ordinarily successful. Possessed of a dominating per-

sonality, he impressed his ideas on patients to a very unusual degree, and with his characteristic optimism and abounding vitality he inspired them with new hope and courage. Though brusque at times and very blunt, he was always forceful in his relations with patients, who accepted his advice and followed his directions as best they could.

Always very fond of music, for many years he had in his own home a pipe organ which he played with much pleasure, and he used to tell how he contributed to his scant income, in the early period of his profession, through his musical ability.

All his life he was a hard worker and he had few vacations, the last in 1921, and such as he had were purely urban. He cared nothing for fishing, hunting or motoring, and his ideal vacation consisted in a trip to New York, where he spent his days on the top story of a hotel reading, and his evenings at the theater. He had a high intelligence and a ready wit and repartee, and was always popular at medical meetings where he often presided easily and ably. To the very last he carried with him his unquenchable courage and cheerfulness and his refusal to accept the rôle of an invalid.

He is survived by his wife and a sister, Mrs. J. W. Bell.

Signed: ARTHUR S. HAMILTON,
H. B. SWEETSER,
E. M. HAMMES,

Committee.

The scientific program was as follows:

Dr. E. M. HAMMES (St. Paul) reported a case of progressive muscular atrophy with initial involvement of the upper spinous muscles gradually extending to the scapulo-humeral group, with respiratory phenomena. The patient was presented.

The patient was a male, 59 years of age, married, a resident of St. Paul. His family history is negative. His personal history shows that he had dropsy in 1893 and an appendectomy thirty years ago. He neither smokes nor drinks. His wife and two children are living and well. She has had no miscarriages.

He stated that for many years his throat has been unduly sensitive to dust and irritating substances. A year ago he had an attack of bronchitis which was relieved somewhat by steam inhalations. Since that time he has had an occasional feeling of tightness in his throat but no obstruction. He paid very little attention to this because it occurred seldom and lasted only a few minutes at a time.

On February 26, 1931, he had a double herniotomy under spinal anesthesia. He did not

notice anything until about four days afterward when he began to have trouble in breathing. There was a great deal of inspiratory weakness but no obstruction. He stated that it felt as if his chest were one great big empty space and that he could not fill it with air. There was no change in his voice, and swallowing was normal.

The inspiratory difficulty has become more constant of late. At first it was intermittent and worse at night. Now it is almost constant and least noticeable when he is lying on his back. When he gets up in the morning and bends over it is most troublesome.

His general physical condition is somewhat below normal. His weight is less than it was a year ago by about eight pounds. His appetite is fair, his bowels regular, and he sleeps well. He has had arthritic pains in his shoulders and hips for the past few years.

X-rays of his chest show that the diaphragm extends high up bilaterally. His arms feel weak, especially in the shoulders. This has been present for the past year. He has had a feeling of weakness and soreness in both gluteal muscles for the past nine months. In the past two years he has developed some scoliosis and his shoulder blades stick out more than formerly.

The physical examination shows that he has many teeth missing and there is slight evidence of pyorrhea. There is fairly marked winging of the scapulae.

The neurological examination shows that the pupils, cranial nerves, and fundi are normal. The upper extremities show bilateral atrophy of the shoulder girdle, upper arm, chest and spinous muscles, especially in the upper dorsal region. There is marked, coarse fibrillary and fascicular tremor over all these muscles and some slight fibrillary tremor of the gluteal muscles. The muscle strength is impaired and expansion of the chest is limited. The deep reflexes in both upper extremities are present but somewhat reduced. Both lower extremities show normal knee and ankle jerks. There is no ankle clonus or Babinski, and no evidence of atrophy. The muscles in the gluteal region seem to have a little less pronounced tone than those of the other lower musculature. The abdominal and cremasteric reflexes are normal. Sensation is normal throughout. He has quite a marked kypho-scoliosis. The Romberg is negative.

His hemoglobin is 85 per cent; blood pressure 148 systolic, 96 diastolic. Urine is normal.

DR. HORACE NEWHART (Minneapolis) read his Inaugural Thesis entitled "Recent Advances in

Deafness Prevention," and demonstrated the use of the audiometer.

DR. W. F. BRAASCH (Rochester) read a paper, and showed numerous X-ray films, on "Intravenous Urography."

DISCUSSION

DR. E. L. GARDNER (Minneapolis): What precautions, if any, do you take against reaction in this procedure?

DR. BRAASCH: I have never seen any systemic reaction in any of these patients when using Skiodan.

DR. GILBERT THOMAS (Minneapolis) (by invitation): I wish to thank the president for the privilege of listening to DR. BRAASCH's paper as a guest of DR. FOLEY and the Academy of Medicine.

In discussing DR. BRAASCH's paper and the conclusions which he has drawn, one must remember he has had a wide experience, and has examined thousands of pyelograms. I was a student with him when he was compiling data for his book on urography, and I know the immense amount of material he reviewed before publishing the book. The same has been true in his experience with Skiodan and intravenous urography.

As DR. BRAASCH has told you, obstructions in the ureter or any condition which prevents the normal outflow of urine from the kidneys and through the ureters will make a very good urogram after intravenous injection of skiodan. Intravenous urography will orient shadows supposed to be stones in the urinary tract. The size and position of the kidney, together with the identification of masses in the abdomen in relation to the kidney, may be made with skiodan, or intravenous urography.

This drug, which contains a large amount of iodine, is contra-indicated when the combined renal function is low. Definite harm may occur in the presence of marked renal insufficiency if it is used.

The technic of intravenous injection should be carefully learned by any one who proposes to use intravenous urography. Much harm and discomfort to the patient may occur if care is not used in the preparation of the water and the solution which is finally introduced into the vein.

When iodine containing drugs were first used we believed they were contraindicated in the study of tuberculosis of the kidney. However, after chemical analyses by the Mayo Foundation, we learned that skiodan is eliminated in just the same form as it is given, so that no free iodine is found in the blood stream.

Intravenous urography is particularly helpful when it is impossible to introduce a cystoscope into the bladder. Sometimes this occurs in children. In severe cystitis, particularly tuberculosis, this method of examination is useful, as well as in traumatic conditions of the ureter or bladder. Many times intravenous urography is the only method which can be used for making diagnoses in the types of cases just mentioned.

Intravenous urography, then, is just another method of accurate diagnosis, and should be used as such. I think this point should be emphasized so that physicians and surgeons who have not heretofore interpreted urograms and who have not taken careful histories and obtained other data that is necessary should not use the intravenous urogram as the only criterion for making positive diagnoses.

DR. S. M. WHITE (Minneapolis): I would like to

ask DR. BRAASCH how long before the uroselectan or skiodan is given, do you cease giving water; in other words, how many hours before the intravenous injection is water interdicted?

DR. S. E. SWEITZER (Minneapolis): I would like to ask DR. BRAASCH if he has seen any cutaneous eruptions from the use of this iodine preparation. Practically every drug that has been administered will occasionally give an eruption on the skin. I have seen some articles that stated Uroselectan had caused some skin eruption.

DR. F. E. B. FOLEY (St. Paul): DR. BRAASCH's opinion and appraisal of this new method are extremely valuable. Most of us have had insufficient experience with it to permit forming so valuable an opinion.

I was gratified to find him so guarded in praising intravenous urography. When I first read Swick's paper, I thought I would have to give up urology in favor of something else, for it appeared that intravenous urography was going to eliminate the cystoscopist. Experience has not borne this out. Those of us who are using it regularly are becoming more and more aware of its limitations. It appears now that the most significant accomplishment of intravenous urography is going to be the easy ferreting out of a greater number of obscure urologic conditions, that will then be submitted to the more comprehensive study possible by cystoscopy, and the more accurate interpretation permitted by a direct pyelogram.

I endorse enthusiastically all of what DR. BRAASCH said, with one exception. Unless I misunderstood him, it was said that in the case of an obscure abdominal condition intravenous urography may be used to exclude the upper urinary tract as a cause. That has not been my experience. I would say that positive findings by intravenous urography may be of extreme value in showing the kidney or ureter to be the cause, but negative findings cannot be relied upon. With the rather poor pyelograms so obtained, it is not possible, for example, to exclude kidney tumor, renal tuberculosis, or slight obstructions.

DR. BRAASCH brought out a point which I would like to emphasize. By comparison with direct pyeloureterograms, these are poor pictures in point of interpretive value. He showed from the same case both an intravenous pyelogram and one made by the direct method. It was very obvious, when viewed together, that the intravenous pyelogram suffered tremendously by comparison. When it comes to refinements of interpretation, the very best pyelogram we can get is none too good. Intravenous pyelograms usually fail to show the deformities of early neoplasm, early tuberculosis, small cysts, slight obstructions and changes in the ureter. Accordingly, the negative findings from them have little value.

When it comes to grosser things, such as localization of stone and recognition of obstructions causing well marked dilation, the method is of considerable value. With the exception of these two conditions its value is extremely limited in the general run of upper urinary tract conditions.

DR. BRAASCH covered the whole field so thoroughly that it is difficult to discuss the subject without repeating the things he has already said. However, there is one more point I would like to repeat and enlarge upon. A use of intravenous urography which appeals very strongly to me is its employment in cases of bladder neck obstruction. The information we get from phthalein tests and blood chemistry determination tells us the

functional power of the kidney at that particular time. A low phthalein excretion and nitrogen retention may be due either to mere temporary functional block or to extensive and permanent anatomic change. By phthalein tests and blood chemistry determination we learn nothing of the obstruction and dilatation of pelvis and ureters that occur with long standing vesical neck obstruction. These changes are particularly well disclosed by intravenous urography. Accordingly the method permits us more accurately to appraise the surgical risk, to know the ability to recover function, and to judge in advance how long a period of drainage will be required to attain the maximal degree of functional improvement before the operation is undertaken.

DR. BRAASCH (In closing): In preparing the patient we simply request that as little fluid as possible be taken for twelve hours prior to urography.

When we used a fifteen per cent solution of sodium iodide for intravenous urography we observed a number of patients with severe skin eruptions caused by iodine absorption. Since using iodine organically combined, as in uroselectan and skiodan, I have not observed any skin reaction.

DR. THOMAS is quite right in statements regarding the difficulties of technic involved. The question may well be asked, who is best equipped to make the intravenous urogram? At the meeting of the American Roentgen Ray Society, which I attended last fall, it was very interesting to find that there were a number of roentgenologists who announced that they were equipped to do intravenous urography. There should be no competition between the roentgenologist and the urologist; they should combine their resources. This is also true of the urologist and the general practitioner. The technical difficulties in the hands of a man accustomed to intravenous manipulation are not many. The greatest difficulty may be found in interpretation.

Although intravenous urography may be of much value in general diagnosis in many ways, it will be of greatest use in that it offers a simple method of recognizing hydronephrosis, which is so frequently overlooked. It will also be of great assistance in the recognition of stone in the kidney and ureter. I do not use the cystoscope now in many of these cases, for with the evidence that the intravenous urogram offers, there is no object in cystoscopy. It will be a valuable factor in preventing the general man from overlooking lesions of the urinary tract in differential diagnosis.

The meeting adjourned.

R. T. LAVAKE, M. D., Secy.

COMBINED USE OF DIGITALIS BODIES AND EPHEDRINE HYDROCHLORIDE: EFFECT ON UNANESTHETIZED DOG

CARL A. JOHNSON and N. C. GILBERT, Chicago (*Journal A. M. A.*, May 16, 1931), describe experiments that they performed on unanesthetized dogs to determine whether the combined effect of digitalis bodies with ephedrine has any untoward effects. On the basis of the results obtained and from certain clinical observations, they conclude that undesirable or even dangerous effects are liable to occur. When digitalis is being used in the treatment of cardiac conditions, ephedrine should not be used or else should be used with extreme caution.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. A. R. Johnson, Eveleth, Minn., has moved to Isanti, Minn., where he will continue general practice.

Dr. F. P. Silvernale, Great Falls, Mont., was recently married to Miss Mathilda Barthwold, of Havre, Mont.

Construction of an addition to the Owatonna, Minn., Hospital will be started at once at an expense of \$100,000.

Dr. O. Sarff has opened offices for general practice at Roseau, Minn. Dr. Sarff was formerly located at Baudette.

A new hospital at Vermilion, S. D., will be built this season at a cost of \$100,000, with a capacity of 50 to 60 beds.

Dr. G. R. Waldren, who has been in active practice at Drayton, N. D., for several years, has moved to Pembina, N. D.

Dr. C. C. Hoagland, Madison, S. D., has returned to his practice, after spending several weeks traveling on the Pacific Coast.

Dr. W. W. Murphy, Minneapolis, was instantly killed near Hinckley, Minn., recently, by his auto skidding and going into a ditch.

Plans are being made for adding another story to the Covell Hospital at St. Peter, Minn., which will increase its capacity by 15 more rooms.

Dr. D. F. O'Connor, Elkton, S. D., is taking a few weeks' vacation, and during his absence Dr. E. O. Church is in charge of his practice.

Dr. P. H. Burton, Fargo, has again resumed active practice, after spending two months at Harvard University in taking postgraduate work.

Dr. Ivar Sivertsen, Minneapolis, has been named as a member of the Minnesota State Board of Medical Examiners for the coming six years.

Dr. E. W. Pickard, Bonesteel, S. D., met with a tragic death on his birthday, being killed in an auto accident, while out for a pleasure ride with his wife.

Dr. S. A. Slater, Worthington, Minn., will spend the next few months traveling abroad, visiting in Ireland, England, Scotland, Holland, and France.

Thirty-seven nurses were graduated from the Northwestern Hospital, Minneapolis, this month. Mrs. F. W. Bowman, president of the board, awarded the diplomas.

Dr. A. R. T. Wylle, Grafton, N. D., was at the annual meeting of the superintendents of the U. S. Feeble Minded Association held in New York City last month.

Hospitals operated by the Northern Pacific Railway Beneficial Association cared for nearly 35,000 patients during the year 1930, at an expense of over \$600,000.

Dr. V. A. Mulligan, a 1930 graduate of the University of Minnesota Medical School, and since that time in general practice at Duluth, is now located at Langdon, N. D.

Gov. Green of South Dakota, has named Judge Larson of Sioux Falls, and Mrs. Carrie Palmer, Rapid City, members of the State Child Welfare Commission of that state.

Dr. W. G. Richards, Billings, Mont., gave a very interesting address before the Commercial Club of that city recently, his topic being "Billings as a medical and hospital city."

Dr. W. S. Cogswell, secretary of the Montana State Board of Health, has been making several speeches at different cities in his work of investigating spotted fever in that state.

The North Dakota Supreme Court have made a recent ruling that a doctor maintaining a hospital is liable for the negligence of employes in connection with treatment of patients.

Thirty members of the senior class at Fairview Hospital, Minneapolis, were graduated last month. Dr. Carl M. Weswig, president of the Hospital Board, presented the diplomas.

Dr. Robert Hill, Ipswich, S. D., will spend the next few months in Ireland visiting old friends. He is taking his auto along, so as to enjoy the tour with leisure and visit all interesting places.

Dr. Henry O. Ruud, Grand Forks, N. D., is off for a three months' vacation in Europe. Two months of his time will be spent at Vienna, where he will study eye surgery at the leading hospitals.

Dean E. P. Lyon, head of the University of Minnesota Medical School, was a speaker at St. Paul chapter of the American Interprofessional Institute, his subject being "Heredity and Human Welfare."

Dr. Charles H. Neill, who has been in active practice in Minneapolis, for over 30 years, died this month after a short illness. Dr. Neill was 60 years of age and a graduate of Harvard University Medical School.

Dr. and Mrs. Benjamin Thomas, Huron, S. D., will spend the next four months in Europe. This is the third trip that Dr. Thomas has taken abroad and he will devote several weeks' study in postgraduate work in leading hospitals.

The May meeting of the members of the South-West Medical Society held at Hettinger, N. D., was largely attended and a very interesting and instructive paper on "Heart Disease" was presented by Dr. J. O. Arneson, Bismarck.

Dr. A. D. McCannel, the well known physician of Minot, N. D., was obliged to undergo an operation at the Mayo Hospital, Rochester, last month. The Doctor is making a rapid recovery and will soon be able to resume practice.

Twenty-five members of the Northwest District Medical Society held their monthly meeting at Minot, N. D., last month, and after enjoying a fine dinner, two Case Reports were presented by Dr. M. J. Fardy and Dr. A. R. Sorenson.

The annual meeting of the Montana Medical Society will be held at Bozeman, on July 8th and 9th. A fine program has been arranged for the two day sessions. Dr. Leroy Southmayd, Great Falls, is president and Dr. E. G. Balsam, Billings, secretary.

Dr. H. M. Workman, Tracy, Minn., was presented with a fine gold watch at the annual meeting of the Minnesota State Medical Association last month. The gift was in recognition of Dr. Workman's 50 years of service given to medicine in this state.

Dr. Henry J. Prentiss, aged 63, head of the department of anatomy in the University of Iowa, died recently at his home of heart disease. Dr. Prentiss had taught histology and embryology in the University college of medicine since 1904. He made many contributions to the study of anatomy on which he wrote frequent magazine articles.

Wives of South Dakota doctors claim credit for organizing the first woman's auxiliary to any State Medical Society. It was started with 18 charter members in 1910, and at the present time has over 100 active members. Mrs. T. J. Billion, Sioux Falls, president, Mrs. J. C. Ohlmacher, Vermilion, vice-president, and Mrs. N. E. Hopkins, Arlington, secretary.

The regular monthly meeting of the Black Hills District Medical Society was held at Lead, S. D., with a large attendance, and a program presented as follows: Dr. N. E. Mattox, Lead, "Skull Fractures"; Dr. P. P. Ewald, Lead, "Re-

marks on the Treatment of Diabetes"; Dr. N. W. Stewart, Lead, "Trichomonas Vaginalis"; Dr. R. E. Jernstrom, Rapid City, "Spinal Anesthesia"; and Dr. N. T. Owen, Rapid City, discussion of blood transfusion methods and a demonstration of a blood transfusion machine of his own invention.

The Minnesota State Medical Association broadcasts weekly at 10:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). *Speaker:* William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month of July will be as follows: July 1st—Safety First for the Fourth. July 8th—Cause of Albumin in Urine. July 15th—Type I Pneumonia. July 22nd—Aims of Education. July 30th—Newer Knowledge of Cancer.

Dr. Richard E. Scammon, during the present academic year dean of medical and biological sciences at the University of Chicago, will return to the University of Minnesota this fall to fill the newly created post of dean of medical sciences. Dr. Scammon was professor of anatomy at the University of Minnesota prior to his going to Chicago in the fall of 1930. He has done much research work in comparative embryology and the growth and physical development of children, and is the author of several books on these subjects. In his new position he will be especially charged with the stimulation of research in medical science and related fields that requires the coöperation of the various colleges of the University.

Dr. F. L. Wicks, Valley City, N. D., was elected president at the thirteenth annual session of the North Dakota Academy of Ophthalmology and Otolaryngology. Other officers elected were Dr. Axel Oftedal, Fargo, vice president, Dr. W. L. Diven, Bismarck, secretary-treasurer. Members of the council include Dr. W. R. Winn, Fargo, Dr. C. J. Gislason, Grand Forks, Dr. George M. Constans, Bismarck. During the afternoon program of informative discussion a paper prepared by Dr. Thomas Allen, Rush Medical School, Chicago, was read by Dr. L. N. Grosvenor, Huron, S. D. The subject was "Angiosclerosis in the Retina." General discussions on the program were led by Dr. L. N. Grosvenor, Huron, Dr. R. A. Kelly, Mitchell, Dr. H. C. Peabody, Webster, S. D., and Dr. John Gregg, Sioux Falls.

CLASSIFIED ADVERTISEMENTS

Wanted—Locum Tenens Opening

Physician experienced in general, mine and hospital practice will consider locum tenens opening for doctor desiring to leave his practice protected while absent. Available at once. Licensed in Missouri, Kansas, South Dakota, Montana. State definitely terms of contract in first letter. Address Dr. P. P. Halleck, Denton, Montana.

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A very fine collection of instruments for sale at a sacrifice. Very anxious to sell in order to settle estate. Address Box 833, care of this office.

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Experienced laboratory, X-ray and physio-therapy technician would like position in Hospital, Clinic or Doctor's office. Good references. Address Box 834, care of this office.

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A \$15,000 practice for sale in Western Minnesota, city of 5,000. Only five physicians all doing general practice. Will sell part or all of office equipment. Free introduction. Reason for selling, moving to West Coast. Terms given to suit buyer. Address Box 835, care of this office.

For Your Vacation

If you want some thing different, spend your vacation at The Open Door on beautiful Lake Le homme Dicu, near Alexandria, Minnesota. Quiet—Seclusive—Best things to eat—Mile from golf course—Fishing and swimming. Accommodations limited to 25. Address Mrs. Walter Campbell, Alexandria, Minn.

For Rent

Doctor's office occupied by prominent physician. Office elegantly equipped. Individual treatment room, laboratory, etc. Reception room is shared with dentist and other physician. A new up-to-the-minute medical building, located in one of the best business intersections of good residential district. This is an unusual proposition and must be seen to be fully appreciated. Address Box 837, care of this office.

Practice for Sale

In finest farming community in Minnesota. Collections very best. Office equipment and home for sale. Reasonable terms. I am going abroad. Address Box 838, care of this office.

Associate Wanted

Wanted as associate, a physician with one or two years experience, with the view of gradually inheriting a \$15,000 cash practice in a city of over 15,000 inhabitants. Only man with vision need apply. Address Box 839, care of this office.



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COMPLICATIONS OF SPINAL ANESTHESIA*

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Spinal anesthesia is now a valuable addition to the surgeon's armamentarium. Its application has been gradually simplified, and one writer on the subject states that anyone who can do a spinal puncture can induce spinal anesthesia. Such an attitude may cause complications to occur which may prove very embarrassing and cause one to discard the method.

"The complications and after effects of spinal anesthesia are less understood and consequently more feared by the surgeon than many of the complications of general anesthesia or of major operations," says Evans⁷.

For the operator to be confident in this method of anesthesia, it becomes necessary for him to consider the possible complications and the reasons for their occurrence. It is with such knowledge that some of the pitfalls may be avoided and thereby a more satisfactory anesthesia created.

The most frequent complication that has been noted is postoperative headache. It has been reported as occurring in from one to ten per cent of the cases where spinal anesthesia has been induced with novocaine. Featherstone¹⁴, using tropocaine, reports headaches in forty per cent of his cases. Spinal puncture for diagnosis is frequently followed by headaches. In fact, before the period when spinal anesthesia became popular, it was thought that spinal puncture was nearly always followed by a period of intense headache.

The refinements in the spinal puncture technic which have occurred because of the increased interest in spinal anesthesia, have materially reduced the incidence of these headaches.

The degree of headache varies from a mild sensation of fullness in the head to a severe type of excruciating pain. The majority are of the milder type and last a period of a few days. They are usually controlled by the common analgesic drugs and the use of an ice bag. The patient should be kept quiet and prevented from raising his head as this makes the aching more pronounced.

The occurrence of a severe type of headache is trying to both surgeon and patient. Koster and Weintrob^{13, 14} report five cases of this type which lasted several weeks in their series of six thousand spinal anesthesia inductions. The occurrence of the headache is due to a decrease or to an increase in the volume of the cerebrospinal fluid. Headaches caused by the loss of the cerebrospinal fluid are usually noticed when the individual tries to raise his head or sit up. Relief is obtained by lying down but sometimes the foot of the bed must be elevated before relief occurs.

In differentiation, headaches due to increased cerebrospinal fluid volume are not relieved by position. This type is the one which is more severe and is usually more difficult to control. To make our patients comfortable during the postoperative period is equally as important as making the operation painless and allaying the apprehension of the patient.

*Presented before the Abbott Hospital Staff, Minneapolis, May 11, 1931.

There are some prophylactic measures which will reduce the occurrence of the postoperative headaches. It was noted by Martin and Arbuthnot¹⁴ at the Los Angeles General Hospital, that the patients on the urological service who were prepared by forcing fluids and allowed to have coffee and all the water they wished before going to the operating room, had less headache than those patients who had no fluids in the morning preceding the operation. The preoperative administration of fluids, either orally, if the operation permits, or by hypodermoclysis, renders the patient a better risk and will make his postoperative period more comfortable.

The spinal puncture needle should be of a small calibre and a short bevel so that the trauma to the dura mater is minimized. A small puncture hole in the dura reduces the chance of seepage of the cerebrospinal fluid and favors a more rapid healing of the puncture wound. The patient should not be allowed to move after the spinal puncture needle is in place as the needle may tear a slit in the dura mater. It was the observation of Sise²¹ that the headaches occurred chiefly in those patients who had moved. Gainde⁸ considers this same factor as contributive to the production of postspinal anesthetic headaches.

The spinal puncture should be performed so as to cause as little trauma as possible. One should endeavor to make the puncture without the reintroduction of the needle into the subarachnoid space, thereby lessening the chance of cerebrospinal fluid leakage and the occurrence of an irritative condition of the meninges. With the consideration of the anatomical structures that the needle has to traverse and as one's experience increases by performance of the puncture, the needle can be placed into the subarachnoid space with very little trauma.

The introduction of foreign material, such as sediment from the syringe or particles of rust from the needles, was suggested by Gainde⁸ as a factor in the production of the postanesthetic headaches. This produced an irritation of the arachnoid with a resulting headache. A reduction in the incidence of headaches resulted when he began to sterilize his syringes in distilled water.

When the headache is established the administration of the common analgesic drugs may be used to control the pain. The greater number of the headaches will be controlled in this way in conjunction with remaining quiet in a horizontal position and the use of an ice cap. The room should be darkened, especially if the headache is associated with photophobia. All excitement

should be avoided.

In headaches due to seepage of the cerebrospinal fluid, the foot of the bed should be elevated so as to allow the healing of the spinal puncture wound. Koster¹⁴ recommends the giving of one hundred cubic centimeters of 0.5 per cent sodium chloride solution intravenously. Relief is usually obtained in twenty to forty minutes. The patient should be encouraged to take a large amount of liquid in order to hasten the replacement of the cerebrospinal fluid.

Where the cerebrospinal fluid pressure is increased, measures directed to its reduction should be used. The giving of hypertonic salt solution both orally and intravenously has given relief to some. Evans⁷ uses ten per cent glucose in physiological salt solution giving one thousand cubic centimeters which he may repeat in six to eight hours. Retentive enemas of six ounces of fifty per cent magnesium sulphate, which may be repeated in four hour intervals, are used with good results in some cases. Relief will result in most cases after the first or second administration. Where the rectal injections were not retained, Koster¹⁴, by giving two cubic centimeters of fifty per cent magnesium sulphate solution intramuscularly, obtained relief.

Secondary spinal puncture¹³ is done when relief does not come from any of the aforementioned procedures. To keep the cerebrospinal fluid pressure down so that the patient's headache is controlled, it may be necessary to repeat the spinal punctures.

A fall in blood pressure due to a paralysis of the vasoconstrictor fibers that leave the spinal cord by the anterior spinal nerves, occurs in the majority of cases with the induction of spinal anesthesia. The amount of this lowering depends upon the number of vasoconstrictor nerves paralyzed. With the vasoconstrictor nerves paralyzed by the central action of the anesthetic drug, the action of the vasodilator nerves is not opposed so that a dilatation of the splanchnic system results. Because of the increase in the vascular bed in the splanchnic area and the formation of an area of decreased pressure in this region, there is a tendency for the blood to collect in the large splanchnic vessels.

Some difference of opinion is expressed in the recent literature as to the advisability of using hypertensive drugs to try to correct this fall in blood pressure. The circulation to the vital centers must be maintained to prevent the occurrence of vascular depression and respiratory failure. Labat^{17, 18} and Koster^{12, 13, 14, 15} place the patient in the Trendelenburg position. The circulation to

the higher centers is thus supported by gravity and the blood supply will continue until the vasoconstrictor nerves again function normally as the effects of the drug disappear. The patient is placed in Trendelenburg position soon after the injection of the anesthetic. Labat¹⁷ is of the opinion that any method which does not place the patient in the Trendelenburg position is a dangerous one even though the site of injection is in the lower segments. One is not certain how high the diffusion of the drug has gone and how many of the vasoconstrictor nerves have been paralyzed.

Sise^{22, 23} of the Lahey Clinic uses epedrine previous to the spinal injection of the anesthetic drug. He believes it aids in maintaining the blood pressure and prevents the occurrence of a vascular depression.

Vascular depression is a condition produced by spinal anesthesia and manifested by a marked fall in blood pressure to a few millimeters of mercury or to a level that can not be read. It is associated with a generalized pallor, the occurrence of a cold perspiration and a marked slowing of the pulse. The pulse becomes slow because of the unrestricted vagus action and there is an accompanying diminution of the pulse volume. The radial pulse may be entirely obliterated. When the blood pressure drops and is not accompanied by any of the other phenomena there is no reason for any concern about the patient's condition.

The change in the blood pressure occurs in from five to fifteen minutes after the injection of the anesthetic drug. The blood pressure response is not a uniform manifestation. It is the consensus of most observers that one cannot predict its behavior. This marked decrease in the blood pressure occurs in from five to ten per cent of the cases, but need not be a cause for alarm unless it is noted that the patient is in a state of vascular depression.

The danger of a lowered blood pressure is the production of a cerebral anemia. If the circulation to the vital centers is impaired, a paralysis of these centers may be produced from which the patient may die if the condition is not speedily corrected. The blood vessels to the brain are end vessels and are not supported by muscles and aponeuroses, so that with a decrease in the blood pressure, the lumen collapses. With a prolonged impoverishment in the blood supply to the brain a partial collapse may result, and be responsible for the patient's death in three to twenty-four hours later.

A paralysis of the respiratory center may occur as a result of the cerebral anemia, producing the dreaded complication of respiratory paralysis.

The patient's respiration is slowed and the excursions decreased, finally making it impossible for the patient to move the tidal air. This condition is the result of cerebral anemia and can be entirely prevented. It is imperative that the patient be observed closely while under spinal anesthesia so that the onset of these conditions may be noted and suitable treatment established.

Sufficient amount of fluids should be administered in the preoperative treatment of the patient, as it will be a great benefit to have the individual come to the operation with a full vascular system. It is the practice of some to give physiological salt solution and glucose by hypodermoclysis just prior to the operation. Dehydrated patients do not stand the drop in blood pressure well, and it has been observed the response from vascular depression is more satisfactory when the individual has had sufficient fluids.

Every patient having a spinal anesthesia should be carefully observed the entire time. A competent anesthetist or person is essential to watch the patient, so that significant changes can be noted early and the more serious complications avoided. The first fifteen or thirty minutes following the induction of the anesthesia is the period when changes occur that are dangerous. Frequent observations of the pulse rate and volume, respirations, blood pressure and mental attitude should be made. Some have arbitrarily considered that a fall in blood pressure of one third the original pressure marks the time for supportive treatment of the vascular system; others are not guided by the fall in blood pressure but rely upon the character and rate of the pulse and the color of the patient. The respirations should be observed so that a gradually developing respiratory failure may be detected. The slowing of the respiratory rate and the decrease of the excursion may be so insidious at times that an inexperienced observer will not have noticed it, and the cessation of breathing will be the first thing that is detected.

Placing the individual in high Trendelenburg position is the one procedure that the majority of operators agree upon in the treatment of vascular depression. This is done to favor the establishment of an adequate circulation to the brain, thereby preventing the damage which would result from the cerebral anemia. Placing the patient should be done immediately with no loss of time. The shoulder rests should always be in place with every spinal anesthesia, so that the establishment of Trendelenburg position is not delayed by having to put them on when the emergency demands it.

The majority of operators use a hypertensive drug before the induction of anesthesia as a prophylactic measure to prevent the fall in blood pressure. Ephedrine is the drug of choice. Sise²³ feels that one hundred milligrams should be the maximum amount in any case. He considers that large doses of ephedrine may be detrimental and attributes two deaths to it, both of which received one hundred fifty milligrams.

However, in the treatment of the vascular depression the drug which is most frequently used by those that recommend hypertensive drugs is adrenaline. The action of the adrenaline is fast and the maximum response comes on and passes off quickly. If it is given early, 0.1 cubic centimeter, subcutaneously, is used. This may be repeated. When the vascular depression has progressed so that the systemic circulation is retarded, the absorption of the drug is delayed and then it becomes necessary to give the adrenaline intravenously.

Where a cardiac paralysis occurs with the vascular depression, intracardiac injection of 0.2 to 0.3 cubic centimeter of adrenaline is employed. If this is unsuccessful, cardiac massage should be used. This may be done transdiaphragmatically, in event of a laparotomy, or a stab wound may be made in the left fourth intercostal space for the introduction of a finger so that massage can be performed.

Babcock¹, in cases of vascular depression, advocates the intravenous injection of physiological salt solution to increase the fluid volume in the vascular system, so as to give sufficient liquid content in the cardiac chambers upon which the cardiac muscles may contract. Evans⁷ advocates the use of intravenous saline injection to which he adds one minim adrenaline hydrochloride, 1-1000, for every one hundred cubic centimeters, not hesitating to give one thousand cubic centimeters slowly.

The Trendelenburg position will improve the circulation to the respiratory center in the event of beginning changes in the respiration, and then one can forestall any further respiratory disturbance. The administration of oxygen or oxygen and carbon dioxide will serve as a stimulant to the depressed respiratory center if the depression has not progressed too far. A gas machine should always be at hand so that this procedure may be readily carried out.

When a respiratory failure has occurred, artificial respiration should be done. As long as the cardiac action is maintained the patient may be carried out of danger by artificial respiration. Oxygenation can be continued by this method un-

til the respiratory center responds from the paralysis. In carrying on artificial respiration one should make sure that the method used is effectual. Pressure on the chest wall has in some cases failed to move the tidal air in the lungs and thus the method did not accomplish its purpose. Babcock¹ places on the nose a wisp of cotton which tells whether there is a passage of air when artificial respiration is done. He saved three cases by mouth to mouth insufflation.

The occurrence of paralysis of the abducens nerve is very disturbing to both patient and surgeon. The onset may occur shortly after the induction of the anesthesia or several days later, even as late as two weeks after the spinal injection. Photophobia is usually noted first and later diplopia supervenes. It remains at its maximum effect for seven to ten days and then gradually subsides, being fully recovered in two months in the most persistent cases. All cases are transient and complete recovery results. The paralysis is usually unilateral, occurring as frequently in either eye. Bilateral cases have been reported.

In 1910 Reber¹ reported five cases of abducens paralysis from the service of Babcock. They became evident seven days following the operation. Since then there has been no occurrence in twenty thousand spinal anesthetics. Stabius and Morton²⁵ had one case in their reported series of one hundred cases. Koster and Weintrob¹⁴ had one case that appeared shortly after the injection of the spinal anesthetic which recovered in a few days. Another case developed ten days after the operation and recovery occurred in two months. The condition calls for symptomatic treatment and assurance to the patient that recovery will occur without any permanent damage.

Nerve injuries have occurred following spinal anesthesia. It has resulted in the form of anesthesia, paresthesia, sharp lancinating pains along the course of nerves, paralyzes of motor nerves, and trophoneurotic changes. Most of the injuries have been transient, the condition clearing up without leaving any permanent disability. Babcock¹ induced spinal anesthesia in one patient eleven times without any injury to the cord or nerves. In another case a violent radiculitis was produced by an accidental injection of a nerve root. In one thousand cases Jackson^{10, 11} had temporary paresthesia develop in four. Case⁵, in a series of eleven hundred cases reports one instance of nerve injury that occurred on the service of a colleague. Neocaine had been used for the induction of the anesthesia in a perineal repair on a woman thirty-six years of age. As the

anesthesia was wearing off the patient complained of severe pain in the tip of the coccyx and in the sacral region. This continued for two weeks and was temporarily relieved by heat and opiates. The pain was greatly increased by raising the trunk, straining, coughing or sneezing. There was a saddle shaped area of total anesthesia in the perineum and buttock associated with rectal and vesical insensibility. The patient became incontinent and had involuntary passages. Hyperesthesia was present in the left first and second sacral areas as well as in all of the right lumbar segments. Diagnosis of a cauda equina lesion, probably hemorrhagic, was made. There was a steady, slow improvement. Five weeks from the onset there was marked sensitiveness in the area which was formerly anesthetic and the other segments had returned to function. Complete recovery resulted.

A disturbance of the anal and vesical functions has been reported as occurring in a few cases following spinal anesthesia. In most of them the normal function reestablished itself in several days to a week. Orth¹⁴ recorded a case of fecal incontinence that cleared up spontaneously after five days. Bazy¹⁴ had a patient who lost the sensibility of the anus resulting in fecal incontinence. He also had a case in which following a herniotomy the man did not have the sensation to urinate. This lasted eighteen months. Sourasky¹⁴ reports a patient who developed urinary incontinence three days after a bilateral herniotomy. There was a urinary retention that overflowed. Fecal incontinence developed shortly afterwards. Normal function did not return for a year. One notes in these cases, as well as in others recorded in the literature, that the disturbance occurs in those operated upon for pelvic conditions. It is known that urinary and rectal complications are liable to follow such operations so it is not always certain what rôle the spinal anesthesia played in the production of these complications.

A purulent meningitis is no doubt feared as a possible complication whenever a lumbar puncture is done. The source of the infection is a faulty technic. Local suppurative processes, as a skin infection, or the presence of an abscess in the muscles, are definite contraindications to doing a spinal puncture. Van Lier¹⁴ reports a case of staphylococcus meningitis as the result of passing the spinal puncture needle through an unsuspected abscess in the sacrospinal muscle.

In the literature for the last twenty years, nine cases of meningitis with two deaths have been reported. Koster¹⁴ mentions a fatal case of

pyocyanus meningitis occurring in an unpublished report. This would indicate that it is a rare occurrence. Koster and Weintrob¹⁴ have induced spinal anesthesia in thirty patients with a positive blood culture, and meningitis did not result in any case. The management of the meningitis is that of any purulent meningitis from other sources.

Spinal anesthesia becomes more useful to the surgeon when he understands the possible complications and the means of correcting them. Although the occurrence of serious complications as found in the literature would seem to be rare, the surgeon should be able to handle the situation masterfully when one occurs. The success of treating the majority of complications that develop in the period during the spinal anesthesia depends on the promptness with which treatment is instituted.

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THE SIGNIFICANCE OF POSITIVE AGGLUTINATION TESTS FOR UNDULANT FEVER IN LOW DILUTIONS.

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INTRODUCTION

North Dakota being a sparsely settled agricultural State with few cities in which pasteurized milk is used more or less exclusively, offers a very satisfactory field of study for undulant fever. Also Dr. F. W. Crewe,¹ State Veterinarian, says approximately 5 per cent of the cattle tested in this State by the agglutination method show a positive reaction, which would offer a considerable number of sources of infection. However, the records of the State Health Department indicate that we have no "undulant fever" problem on our hands, since during the period from January, 1928, to January, 1931, only fourteen cases confirmed by the agglutination test have been reported, this giving us a rate of less than 1 per 100,000. Probably all physicians in the State have been notified concerning the facts of the disease and that the State Laboratories perform agglutination tests for the recognition of it. Even so, we doubt if all cases have been reported.

BACTERIOLOGY OF UNDULANT FEVER

Primarily, undulant fever is a disease of cattle, and as such is known as Bang's Disease or bovine infectious abortion. It is transmitted to man through the handling of infected animals and carcasses, and this means of exposure is almost limited to farmers, veterinarians, and butchers. At times the milk of infected cows may contain a considerable number of undulant fever organisms and the disease is in this manner transmitted to man. The infectious organism represents rather a group of organisms more closely related than the typhoid or paratyphoid group than one single organism. The name *Brucella* has been given as the genus, with two varieties, the second variety being divided into three subdivisions.

1. *Brucella melitensis* (variety *melitensis*).
2. *Brucella melitensis* (variety *abortus*).
 - a. Bovine Strain (infects cattle).
 - b. Porcine Strain (infects hogs).
 - c. Caprine Strain (infects goats).

The known causative agents of undulant fever in man are both varieties, namely, *Brucella melitensis* (variety *melitensis*) and *Brucella melitensis* (variety *abortus*). We are indebted to Alice C. Evans² of the Hygienic Laboratory, Washington, D. C., for the above classification.

THE AGGLUTINATION TEST

This test based upon the same principle as the

Widal, consists of the addition of a suspension of *Brucella melitensis* (variety *abortus*) to various dilutions of human serum, incubation for a definite period and then inspection for agglutination of the organisms. Two agglutination methods for the detection of antiabortus are in common use. Huddleson³ outlines a method which is very rapid but is not suitable for a determination of the titre of the blood. The quantitative macroscopic method outlined by Evans² is satisfactory but time consuming, since the tubes containing the diluted serums and antigen suspension are incubated in the water bath at 55° C. for four hours and then removed to the ice box and allowed to stand over night before they are read. The highest dilution of blood serum that causes complete agglutination is the titre of the blood and is reported as such, as for instance positive agglutination in 1:160, or positive agglutination 1:1280, etc.

For the agglutination test to be of diagnostic value it must be absolutely necessary to establish two factors:

1. Do antiabortus agglutinins occur in the blood of individuals who have never had the disease?
2. What titre must the serum have to be considered a positive reaction?

It is the object of this experimental work to answer these questions.

RESULTS OF OTHER INVESTIGATORS

An examination of the literature on the subject shows a wide difference of opinion as to just what titre a serum should show to be considered a positive reaction. Bulmer⁴ in his admirable monograph on undulant fever states "Nicolle (for a good reaction) 1:10 dilution; Basset Smith 1:30 conclusive of past or present infection; U. S. Army authorities investigating undulant fever did not consider dilutions above 1:80 necessary (Cole). Fici concluded 1:200 minimum for conclusive evidence. The consensus of opinion, however, of authorities at this time is 1:80 (where undulant fever is endemic) is positive for a *Brucella melitensis* infection." Hasseltine H. F.⁵ says: "A positive agglutination test in a 1:80 dilution or higher in a case presenting clinical symptoms of undulant fever warrants a diagnosis even in the absence of a positive blood culture. Giordano and Ableson⁶ in their study of 1,100

blood sera have considered agglutination in 1:10 up to 1:5,000 as positive; Evans² considers that an agglutination in low dilution (1:10 and 1:20) is suggestive and should receive further study. McAlpine⁷ in a serological study of 10,000 specimens of serum considers an agglutination in 1:25 or higher positive. Hardy⁸ in his careful epidemiological study of undulant fever in Iowa included in his positives only those which showed complete agglutination in 1:80 or higher dilution. Simpson and Frazier⁹ in their paper on undulant fever consider for practical purposes agglutination titres of 1:80 dilution or above as indicative of undulant fever, and complete agglutination 1:10 to 1:40 as highly significant.

It is, therefore, apparent that laboratory workers have no definite titre which may be considered as a positive test in the same way as a Widal is considered positive in the 1:40 and 1:80 dilution.

METHOD OF PROCEDURE

My method of approaching this problem was to perform an agglutination test using *Brucella melitensis* (variety abortus) as the antigen upon 500 consecutive specimens of blood submitted to the State Public Health Laboratory in Bismarck, N. D., for the Wassermann test, the experiment extending over a period of four months. The bloods examined were mostly submitted from the State Hospital for Insane, Jamestown, N. D.; Venereal Disease Clinic, Minot, N. D.; State Training School, Mandan, N. D.; State Penitentiary, Bismarck, N. D., and from the private patients of general practitioners in the southwestern part of the State, and were less than one week old before examination. This region in general is a sparsely settled agricultural land and the patients would naturally consume raw milk.

Since a titre of the blood cannot easily be obtained by the Huddleson method and the Evans method is time consuming, I devised a combination macroscopic and microscopic method.

BACTERIAL SUSPENSION

This is prepared as outlined by Evans² in her macroscopic method, with a few changes. A single old stock strain of the abortus variety of *Brucella melitensis* is sufficient for diagnostic work. The strain should be one whose agglutinating properties have been tested and found to be good. The abortus variety of antigen will agglutinate as well as the homologous strain in a serum from a case infected with the true *melitensis* variety of the organism. There is therefore nothing to be gained in using more than one antigen, and the danger of handling the true *melitensis* variety is avoided by using the abortus variety alone for all tests. The organisms are grown on liver agar PH6.8, eight or ten large

slants will be sufficient. In forty-eight hours a luxuriant growth of *Brucella melitensis* is secured. The growth is then carefully scraped off with a sterilized platinum loop and the organisms emulsified in a bottle containing 50 c.c. of sterile physiological saline. If care is taken not to break the surface of liver agar slants, the organisms will not have to be centrifuged and washed. The concentrated suspension is not standardized as to its turbidity at this time. The bottle containing the dense suspension is placed in a water bath and heated to 65° C. for thirty minutes, and then 0.2 per cent tricesol added for a preservative. This now constitutes the stock antigen that must be diluted for use. Evans advocates a turbidity of 500 as a final dilution in the test, using the turbidity standard described in the Standard Methods of Water Analysis, page four of edition 1925. I have adhered to the density for the microscopic method in order that the results may be comparable to those of the test tube method. A better turbidity standard, I find, and one very quickly made, is to mix one drop of milk with 18 c.c. water. This gives the exact milky appearance that the diluted antigen of a turbidity of 1,000 would have for the test. One c.c. of this milk standard is placed in the small test tube (Kolmer tubes satisfactory) and one c.c. of physiological saline placed in a similar one. Using a sterile 1 c.c. pipette, the dense stock antigen is added, drop by drop to the 1 c.c. of physiological saline until its turbidity matches the milk tube standard. Only two or three drops may be necessary depending upon the density of stock antigen. We now have the bacterial suspension ready for use. One c.c. will be sufficient for several hundred tests.

SERUM

Inactivated serum is used in the test. Since the dilution of serum in the first four tubes of Kolmer system as we run it are 1:5, 1:10, 1:20, 1:40, a standard 2 m.m. loopful of this diluted serum is taken directly from each tube. In case the test is positive in the highest dilution of the serum that has been diluted for the Wassermann reaction, still higher ones may be made from the original serum as follows: Ten Wassermann tubes are set up in a row, 0.8 of 1 c.c. of physiological saline is placed in the first tube and 0.5 of 1 c.c. in the other nine. 0.2 of 1 c.c. of inactivated serum is placed in the first tubes, thoroughly mixed, and 0.5 of 1 c.c. of this diluted serum is placed in the second tube, thoroughly mixed, and 0.5 of 1 c.c. of the second tube is transferred to the third tube, thoroughly mixed, and so on until the tenth tube is reached, when the last 0.5 c.c. may be discarded. We now have one-half c.c. volumes of diluted serum in the

dilution of 1:5, 1:10, 1:20, 1:40, 1:80, 1:160, 1:320, 1:640, 1:1280, 1:2560.

THE TEST

Double concavity hanging drop slides are used for the test, two slides for each blood. Clean cover slips are placed on each concavity and the slides marked serially for identification and a small 10, 20, 40, and 80 written beside each successive concavity to indicate the final dilution. One standard loopful (2 m.m.) of serum is transferred from each of the four Wassermann tubes of diluted serum and placed upon its respective cover slip. The platinum wire is then flamed and the same standard loopful is used to transfer a loopful of diluted bacterial suspension (1,000) to each of the four cover slips mixing it with the diluted serum. A drop of immersion oil is placed at each quarter of the circumference of the concavity of the hanging drop slide and the cover slips inverted into place. The drops of immersion oil quickly surround the concavity and form an air tight chamber. This does away with the time honored but less satisfactory vaseline ring method. The final dilution of serum in the hanging drops is 1:10, 1:20, 1:40, 1:80, the final turbidity of each drop 500. The slides are placed in the incubator at 37.5°C. for two hours this period having been determined most satisfactory experimentally and then examined microscopically with the high dry lens for agglutination.

Brucella melitensis suspensions lend themselves admirably to the microscopic determination of agglutination. The clumps are large, well formed, easily and readily distinguishable and the results are available in two hours. No spontaneous agglutination was encountered in the control suspension of this antigen at any time, although it is at least one year old. Known negative serums and known positive serums were set up each time the tests were made and, of course, the suspension of the antigen itself. The Brucella melitensis used by me in making the antigen was secured from the Hygienic Laboratory, Washington, D. C., and was labeled Brucella melitensis variety abortus.

RESULTS

Table I indicates the percentage results of the agglutination test of 500 serums. Complete agglutination is used in compiling this data. Partial agglutination is considered negative.

TABLE I

Agglutination	No. of Sera	Per Cent
Negative	318	63.6
Positive 1:10	67	13.4
Positive 1:20	57	11.4
Positive 1:40	45	9.0
Positive 1:80	11	2.2
Positive 1:160	1	.2
Above 1:160	1	.2

POSSIBLE FACTORS INFLUENCING AGGLUTINATION

There is no question that 36.4% of the bloods examined agglutinated B. melitensis in various dilutions. It remained to prove absolutely that the agglutinins were true anti-melitensis agglutinins. Five factors had to be investigated before one could be sure of this.

a. Constancy of anti-abortus agglutinins in patients.

After a period of approximately ten or twelve months, I attempted to secure another specimen of blood from all patients having a positive agglutination test in dilutions of 1:80 and higher. Out of thirteen positive serums I was able to secure three. The agglutination tests as compared with the previous results are outlined in Table II.

Table II

First Examination			Second Examination		
Serum No. 4	Date	Result	Serum No. 4	Date	Result
	1/15/30	Positive 1:40 1:80		1/16/31	Negative in all dilutions
184	2/19/30	Positive 1:40 1:80	184	12/30/30	Positive 1:40 1:80
359	3/26/30	Positive 1:40 1:80	359	1/28/31	Positive 1:10 1:20

It will be noticed that there has been a fall of agglutinin titre in two of the three serums.

b. Time Factor.

As previously stated, no serum was over one week old before being examined for B. melitensis agglutinins. Since the possibility of a loss of titre in a serum due to age during storage might occur, it was deemed expedient to determine this loss if any. Accordingly five positive serums in dilutions up to 1:80 were secured and the serums pipetted off aseptically into sterile bottles and examined at intervals of ten days up to a period of one month, the serums being stored directly on ice during the interval, and with no added preservative. The sera remained crystal clear throughout the intervening time. Table III gives the titration results over the period of one month.

Table III

Serum No.	Age	Titration Results
Serum No. 1	1 day	Positive 1:40, 1:80
	10 days	Positive 1:40, 50% 1:80
	20 days	Positive 1:40, 50% 1:80
	30 days	Positive 1:40, 50% 1:80
Serum No. 2	1 day	Positive 1:40, 1:80
	10 days	Positive 1:40, 50% 1:80
	20 days	Positive 1:40, Negative 1:80
	30 days	Negative 1:40, Negative 1:80
Serum No. 3	1 day	Positive 1:40, Negative 1:80
	10 days	Positive 1:40, Negative 1:80
	20 days	Positive 1:40, Negative 1:80
	30 days	Positive 50% 1:40, Neg. 1:80
Serum No. 4	1 day	Positive 1:40, Negative 1:80
	10 days	Positive 1:40, Negative 1:80
	20 days	Positive 1:20, Negative 1:40
	30 days	Positive 1:20, Negative 1:40
Serum No. 5	1 day	Positive 1:10, 1:20
	10 days	Positive 1:10, 1:20
	20 days	Positive 1:10, 1:20
	30 days	Positive 1:10, 1:20

A loss of titre takes place upon storage of sera on ice. Four out of five sera showed a

gradual decrease of agglutination titre over a period of one month. A slight decrease may take place in ten days, which however is insufficient to modify the interpretation of the test.

c. Hydrogen ion concentration of Sera.

Under certain conditions a lowered pH value of a medium may induce a pseudo-agglutination of organisms suspended therein, therefore the pH of the above five positive serums together with five negative serums were taken at the start of the above thirty-day period. By the Colorimetric method using the method of Barnett and Chapman as outlined in Stitt¹⁰ the pH of all blood sera both positive and negative were found to be within the normal range namely, 7.3-7.4 using Phenol red as the indicator.

d. Tularemia agglutinins.

Francis, Edward, and Evans, A. C.,¹¹ showed the possibility of cross agglutination between *B. melitensis* and *B. tularensis*. To determine unquestionably that the agglutinins present were not *B. tularensis* agglutinins the above five sera were examined using the microscopic method that I devised for *B. melitensis* agglutinins. All five positive serums for *B. melitensis* used in the previous experiment proved negative in dilutions of 1:10, 1:20, 1:40, 1:80 for anti-tularemia agglutinins.

e. Nonspecific Agglutinins.

Castellani¹² pointed out the absorption method of determining the specificity of agglutinins. By the addition of a bacterial emulsion of the specific organism to blood serum under proper conditions, the specific agglutinin will be absorbed by the bacterial emulsion and completely removed from the serum. Upon the re-examination of the serum by the agglutination reaction, after centrifuging to remove the excess bacterial emulsion, the serum will be found to be without the specific agglutinins.

It was therefore considered advisable to examine the above five positive serums by the absorption method to determine the specificity.

Method of Procedure.

Serum number 1 which was positive in a 1:40 and 1:80 dilution was used for the titration of the bacterial emulsion. Ten small test tubes were set up in a rack, to the first nine tubes 0.1 c.c. serum plus 0.4 c.c. physiological saline were added to each tube, giving a 1:5 dilution. One drop of concentrated stock antigen was added to the first tube, two drops to the second, three drops to the third, etc., up to and including the ninth tube. The volume was then made up to 1 c.c., the total dilution now being 1:10. The tenth tube consisted of five drops of the concentrated stock antigen plus 1 c.c. saline acting as a control for spontaneous pseudo-agglutination. The tubes were

incubated in the water bath at 37.5° C. for two hours and set aside in the ice box for two hours to facilitate reading the amount of agglutination. Tube number 1 and 2 showed complete precipitation of the bacterial emulsion, tube number 3 slightly cloudy with excess emulsion. Two drops of the concentrated emulsion were therefore sufficient to absorb all specific agglutinins and was considered the Unit of Absorption. The Unit of Absorption was doubled in the test, amounting to four drops.

0.1 c.c. of the five positive serums were placed in each of five small test tubes, 0.4 c.c. saline added to each and then four drops of the concentrated bacterial emulsion and incubated at 37.5° C. for two hours. At the end of this period approximately one-half of the emulsion was agglutinated. The five tubes were then centrifuged until perfectly clear and dilutions 1:5, 1:10, 1:20, 1:40 prepared from the supernatant fluid in the usual manner. A standard loopful of each was placed on cover slips, a loopful of diluted antigen mixed with each, as outlined under my microscopic method. After two hours incubation at 37.5° C., the hanging drops were examined by the H. D. lens, and absolutely no agglutination had taken place. This proved conclusively the absorption of the anti-abortus agglutinins by the bacterial emulsion of *B. melitensis* variety abortus and the specificity of the agglutinins.

COMPARISON OF RESULTS WITH THOSE OF
PREVIOUS INVESTIGATORS

Surveying the literature of other investigators I find a great variance in the per cent of positives that they find. Evans¹³ in her investigation of 500 serums found 11.8 per cent positive in dilutions up to 1:320. Larson and Sedwich¹⁴ found 17 per cent positive of 425 children. McAlpine⁷ in an examination of 10,000 specimens found 0.6 per cent positive in 1:25 dilutions or higher. Giordona and Ableson⁶ found 5.7 per cent positive in a study of 1,100 serums. Assuming in my series that those serums showing positive agglutinations in 1:40 and 1:80 or above, I would have 11.6 per cent positive cases which agrees somewhat with Evans and Larson and Sedwich.

My results approach very closely to the results given in a most recent paper on undulant fever. H. E. Hasseltine,¹⁵ under the heading, "Is the Blood Agglutination Test Reliable?" says:

"The significance of agglutination in low titres cannot be stated dogmatically. No absolute line can be drawn which will separate the clinical case of undulant fever from certain apparently well individuals whose blood may give agglutination to some degree. It is well known that some cases

of undulant fever that have never given agglutination in any dilution higher than 1:80 have been proved by positive blood cultures. On the other hand it seems well established that certain individuals may require some agglutinating power as a result of frequent exposure to the infection whether by ingestion or contact. Of 72 practicing veterinarians of Illinois, 3 gave complete agglutination in 1:80, 1:160, and 1:640 dilutions, respectively; 5 others gave complete agglutination in dilutions varying from 1:10 to 1:40; others gave partial agglutination in dilutions varying from 1:10 to 1:80. None of these men have a history of a clinically recognized attack of undulant fever.

"Therefore, the diagnosis of undulant fever must be made by the attending physician, with the aid of the laboratory, and not by the laboratory man. The careful consideration of the clinical symptoms, together with the laboratory findings, will usually lead to the correct diagnosis."

CLINICAL CONDITION OF INDIVIDUALS WITH POSITIVE AGGLUTINATION TESTS

From the 500 serums examined, serums Nos. 4, 5, 37, 39, 111, 184, 200, 262, 299, 359, 383, were positive in 1:40 and 1:80 dilution. Serum No. 52 positive up to 1:160 and serum No. 134 positive in 1:2560 dilutions. Information received from the private physicians of each case is as follows:

Serum No. 4. Widow, age 35, chief complaint, pain in abdomen. Diagnosis questionable gastric ulcer. Temperature 99°. Doctor E. G. S. writes, "Personally I can't believe that she has undulant fever, for what I have read about it recently would make me exclude it."

Serum No. 5. Male patient in State Hospital for Insane. Doctor J. D. C. writes, "I have talked with the patient and from the history that I have obtained from him I would say that he has not undulant fever or any other disease of similar type. His present physical state is good."

Serum No. 37. Male, age 54, patient in State Hospital for Insane. Doctor J. D. C. writes, "I wish to say that he has not undulant fever and there is no indication that he had this or any similar disease. Diagnosis, General Paralysis."

Serum No. 39. Woman, age 35. Doctor F. E. W. writes, "She was questioned at length to get a history of any recent typhoid, influenza, or other disease, but insists that she has not been sick in bed or suffered any other illness. Diagnosis syphilis."

Serum No. 111. Married woman. Doctor P. G. A. writes, "So far as we know she had no sign of this condition. Diagnosis syphilis."

Serum No. 184. Patient, female, age 17. State Training School. Doctor B. S. N. writes,

"No indications of undulant fever."

Serum No. 200. Patient male, age 68. Prisoner at State Penitentiary. Routine Wassermann. Doctor E. C. S. says, "No history or symptoms of undulant fever."

Serum No. 262. Male, age 28, married. Doctor D. J. H. writes, "I am sure that there has been no history of such a condition. He has not had a sickness of any kind. Wassermann to exclude lues."

Serum No. 299. Male, age 33, inmate of State Penitentiary. Routine Wassermann. Doctor C. E. S. says, "No symptoms or history of undulant fever. Diagnosis syphilis."

Serum No. 359. Male, age 41. Doctor K. H. M. writes, "This patient has never had any kind of fever in his life. He is well and enjoys good health."

Serum No. 383. Patient female, married. Doctor F. E. W. writes, "No symptoms suggestive of undulant fever. Routine Wassermann. Diagnosis urticaria."

Serum No. 52. Positive agglutinations in 1:160. Woman, age 40. Wassermann to check treatment. Doctor R. W. H. says, "No history past or present of undulant fever. Diagnosis phlebitis. This woman has been known to drink raw milk from an infected herd."

Serum No. 134. Positive agglutinations 1:2560. This patient is a young man, age 17. Diagnosis gingivitis and stomatitis. No further history could be secured.

SUMMARY

1. The microscopic agglutination reaction for the detection of *Brucella melitensis*, variety abortus agglutinins was applied to 500 consecutive Wassermann serums submitted to the State Public Health Laboratory.

2. A quick microscopic method of examination has been devised and explained.

3. A total of 36.4 per cent of the sera contained antiabortus agglutinins in dilutions of 1:10 or above.

4. A total of 11.6 per cent of the sera were positive in dilutions of 1:40 and 1:80 or above.

5. In not one single instance did the clinical condition of the patient warrant a diagnosis of undulant fever from a positive 1:40 and 1:80 agglutination test.

6. A positive agglutination test of 1:160 did not warrant a clinical diagnosis of undulant fever, although there was contact with an infected herd through the milk supply. No past or present symptoms.

7. A positive agglutination test of 1:2560 was not an active case at the time the sample of blood was submitted.

CONCLUSION

1. Due to presence of antiabortus agglutinins found in the blood of humans free from undulant fever clinically, positive agglutinations in dilutions up to and including 1:160 cannot be accepted as diagnostic evidence alone, in determining a *Brucella melitensis* infection.

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ANEURYSM OF THE ABDOMINAL AORTA WHICH TERMINATED BY RUPTURE INTO THE DUODENUM*

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An aneurysm is of clinical interest wherever its location. Aortic aneurysms may present perplexing and fascinating diagnostic problems especially when a system other than the circulatory appears to be involved. Aneurysm in the abdominal aorta is comparatively rare, occurring much less frequently than in the thoracic aorta, the ratio being variously given as 1:2, 1:4, and 1:7 in different hospital reports.

The termination of an abdominal aneurysm is usually by retroperitoneal or intraperitoneal rupture. Occasionally rupture takes place into some portion of the gastrointestinal tract.

Recently it was our fortune to see a patient with an abdominal aneurysm which ruptured in an unusual and dramatic manner. The history is as follows: Mr. L. H., 69 years old, a farmer, was first seen February 2, 1930, in consultation with his physician, Dr. B. M. Hart of Onida, S. D. His complaint was "backache, weakness and bowel trouble." P. H. Essentially negative. The patient has always been a very rugged, active, hardworking man. No history of syphilis or of any serious illness.

P. I. The onset began in August, 1929, when the patient was busy with harvest work. He noticed a severe lumbar backache and some weakness making it difficult for him to work. The sense of weakness passed away after a few days, and though a dull backache continued he went about his work as usual and nothing more of interest was noted until the following January (1930), when he began to have waves of nausea and persistent constipation. The appetite remained good in spite of the nausea but the con-

stipation required enemata and cathartics. The stools resulting from the enemata were usually large, but on several occasions repeated doses of castor oil were necessary to obtain an evacuation. Much mucus was noted in the stools. The patient stated that the pain in the back was relieved best by large enemata, he being able to retain as much as three litres.

P. E., February 2, 1930. A brief of the positive findings is as follows: An elderly white man showing no evidence of recent loss of weight and apparently in good physical condition. There was a moderate amount of peripheral sclerosis. Heart and lungs negative. The blood pressure was well within normal limits. In the epigastrium approximately two inches above the umbilicus and a trifle to the left of the midline was an indefinite, non-pulsating, slightly tender mass about six by eight cm. in size. The mass did not move with respiration and nothing diagnostic could be determined. On February 3 a partial X-ray study consisting of a clysma and a soft G. I. without a motor meal gave the impression of "a negative stomach, duodenum and colon." The patient refused to remain for a complete examination and returned to his home. A blood Wassermann and Kahn taken at this time were negative.

The patient was again seen on April 10, 1930, when his physician brought him to the hospital in Pierre because of a small hematemesis and profuse melena. In discussing the recent history the patient stated he had been doing his regular farm work since the latter part of February. His appetite had been excellent and the bowel action had been normal. There was, however, a persistent lumbar backache and a burning sensation in the midabdomen. On April 8, he had loaded

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a wagon with one hundred bushels of wheat, it being necessary to bend over the lower door of the grain bin in order to lift up the heavy container in which he measured the wheat. That night he had a bloody and tarry stool associated with weakness. He insisted on working the next day, but was found in a state of shock and taken to his home.

The findings at the time of admission on April 10 were as follows: Mentally clear. Appreciable pallor of the mucus membranes and a rapid, easily compressible pulse. The mass in the epigastrium did not pulsate and did not appear to have changed since the examination in February.

The patient's general condition seemed to improve slowly, but on April 14 a distinct change was noted in the epigastric mass, it being more distinct and showing a definite expansile pulsation and a clearly audible bruit. That the condition was an aneurysm of the abdominal aorta was then evident, and in discussing the case it seemed logical to conclude that the only way the intestinal hemorrhage could be accounted for was through an aortic duodenal fistula at the point where the third portion of the duodenum crossed the abdominal aorta.

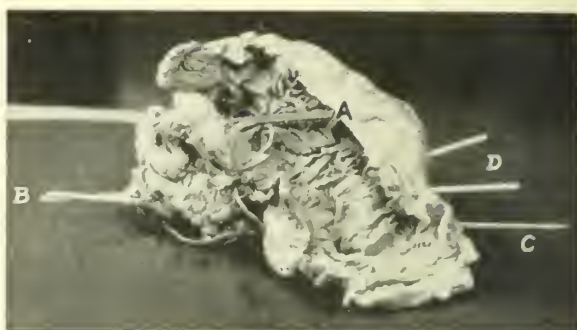
That night the patient was comfortable and slept well. At about 5:30 on the morning of April 15 he called a nurse and asked for a glass of water. Within a few minutes after leaving the room the nurse heard a noise and returned to find the patient on the floor dead. There was a profuse bloody stool and some hematemesis.

A post-mortem examination, limited by relatives to the abdomen, was done through a long midline incision. The peritoneal cavity was extremely dry, the liver was small, smooth, and nutmeg in color. The gall bladder was small, emptied easily, was free from adhesions, unusually green in color, and contained small areas of yellowish stipplings. The stomach and duodenum were filled with blood. A few flakes of blood could be seen in the loops of the more distal small bowel but these were almost entirely in contraction and empty. The large bowel from the cecum to the rectum, with the exception of the descending colon, was filled with blood.

The duodenum and the greater portion of the abdominal aorta including the bifurcation of the common iliac and the vena cava were removed en block, with the exception of a small portion of the posterior wall of the aorta and the aneurysmal sac, which remained densely attached to the lower part of the third and the upper part of the fourth lumbar vertebræ. The bodies of these vertebræ were slightly but definitely eroded.

PATHOLOGICAL REPORT

"The detached mass is roughly about 12 cm.



in length and 8 cm. in thickness. It is limited posteriorly by the aorta and vena cava, the former showing the opening where it was attached to the lumbar vertebræ. Anteriorly, firmly attached and crossing the mass obliquely is the third portion of the duodenum.

"The aortic intima is roughened, containing many irregular, slightly raised, firm, yellow plaques, the larger tending to run longitudinally. The smaller are rounded areas consisting of pearly gray intimal thickening with deep set yellowish centers. From beneath the larger plaques a brownish yellow cretaceous material can be expressed.

"On the anterior surface of the aorta and about two cm. above the bifurcation is the aneurysmal sac, a rough walled cavity 4 cm. in diameter, largely filled by laminated partly organized blood clot, and connected with the aorta through a round smooth edged opening 2.5 cm. in width.

"On opening the duodenum normal appearing mucosa is disclosed surrounding a small fistula 1 cm. across which communicated directly with the aneurysm.

"Microscopic sections of the wall of the aneurysm show an organized blood clot and a wide area of connective tissue infiltrated with mononuclear cells, a few multinucleated giant cells, and areas of fatty and hyaline degeneration."

A general discussion of aortic aneurysm is unnecessary, since the matter has been so fully covered in the standard textbooks and in medical literature. Aneurysm of the abdominal aorta, while less frequent than thoracic aneurysm, is possibly of greater diagnostic interest because of the vagaries of this condition, a point well shown by Nixon (in 1911) in his tabulated and extremely instructive study of 233 collected cases. In only one of the cases collected by this author was the rupture of the aneurysm into the duodenum, this being a twenty-four year old man reported from Nunneley's series. In the review of the literature at our command we were able to find only nine such cases reported, two being without details.

In 1893, Brannan published a report, the patient being a seventy-three year old man, the history, the termination and the autopsy findings being in many respects very similar to the case we have presented. No statement was made as to whether syphilis had been suspected or had been ruled out. In his discussion he stated that "the records of the London Pathological Society for the past forty years show eleven cases of rupture of abdominal aneurysm, and in only three of these did it rupture into the intestines, twice into the duodenum and once into the descending colon." We have been unable to obtain these records for detailed study.

Berge, in a thesis in 1913, gave a summary of a case reported by Boinet, in 1899, the patient being a twenty-eight year old man, a syphilitic, who presented with a clearly pulsating epigastric tumor and whose death was sudden and the result of perforation into the duodenum. The autopsy showed a saccular aneurysm of the abdominal aorta arising from a point slightly above the origin of the superior mesenteric artery.

A tuberculous aneurysm of the abdominal aorta with rupture into the duodenum was reported by Tozer, in 1914, as having occurred in the London Hospital. This patient was thirty-two years of age, single, and had been a diver in the Royal Navy for eleven years. Blood Wassermann on repeated tests was negative. Operative and post-mortem findings established the diagnosis.

Marlow and Doubler, in 1918, reported two cases of aneurismoduodenal rupture. One of these, a man thirty-nine years of age with a negative Wassermann, was from the Peter Bent Brigham Hospital, and the other an eighty-one year old man from the Long Island Hospital. Post-mortem findings in each showed arteriosclerosis as the causative factor.

In 1928, DeMassary and Flandrin published the report of a fifty-three year old man whose history was positive for syphilis but who had suffered little pain or digestive disturbance. He presented a large midabdominal tumor which showed expansile pulsations. He was admitted to the hospital because of repeated hemorrhages from the digestive tract which ultimately were fatal. The post-mortem findings were a diffuse abdominal aneurysm, densely adherent to the surrounding structures and perforating into the third portion of the duodenum.

SUMMARY

The report of an aneurysm of the abdominal aorta which leaked into and finally ruptured into the third portion of the duodenum. Tabulation and brief of nine similar cases as found in the literature.

The case reported was also of clinical interest because of gastrointestinal symptoms before diagnosis of true condition could be made.

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TABULATION OF REPORTED CASES OF ABDOMINAL ANEURYSM WHICH RUPTURED INTO DUODENUM

Number of cases	Sex	Age	Occupation	Syphilis	Arterio Sclerosis	Description of Aneurysm	Chief signs and symptoms	Reported by
2			No Details			From records of London Pathological Society previous to 1893		1893 Brannan
1	M	73	Not given	?	X	Saccular below renal A.	Dyspnea, epigastric and abdominal pain	Brannan 1893
1	M	28	Porter	X	?	Saccular above celiac axis	Epigastric pain, Jaundice	Nunneley's series-Nixon 1912
1	M	28	Not given	X	X	Saccular above sup. mesenteric	Abdom. and lumbar pain Loss of weight	Berge-1913 (Boinet 1899)
1	M	32	Driver	-	T.B.	Saccular-wide mouth, below celiac axis	Abdominal pain	Tozer-1914
1	M	39	Not given	-	X	Fusiform below renal arts.	Abdominal pain	Marlow & Doubler 1918
1	M	81	Not given	?	X	Saccular below renal arts.	Sharp back pain	Marlow & Doubler 1928
1	M	53	Not given	X	X	Fusiform below renal arts.	Indigestion, loss of weight	DeMassary & Flandrin 1928
1	M	69	Farmer	-	X	Saccular below Sup. Mesenteric	Nausea, constipation grinding pain in back	Riggs & Massey 1930

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A CASE OF PERNICIOUS VOMITING OF PREGNANCY

By CHAS. H. WEISHAAR, M.D.

ABERDEEN, S. D.

The treatment of the pernicious vomiting of pregnancy with large doses of bromides, administered by rectum, is frequently followed by a complete cure. Inasmuch as many practitioners have overlooked this treatment or have been too cautious in the application of it, I wish to report in some detail this treatment for a patient I recently attended.

Mrs. B., a German housewife, thirty-five years old, married sixteen years, the mother of six living children, came under my care February 9, 1931. This patient had always been in good health until 1918, when she had a severe attack of influenza, from which she had a slow convalescence. A chronic bronchitis followed and later bronchial asthma. January 1, 1931, she was nauseated and felt weak but remained up and about. The nausea became worse and she began to vomit frequently. A physician was called who advised hospitalization, which was refused until January 22, when she was admitted to St. Luke's Hospital.

Following examination, a diagnosis of intestinal influenza and bronchitis was made. At this time the urine was normal and the leucocyte count was 10,800. She was discharged from the hospital on her husband's request, January 28, slightly improved. A few days after leaving the hospital the vomiting attacks increased in frequency and severity without relation to food or fluid intake. She had slept very little and had retained very little nourishment for the two weeks preceding my first examination. During this examination she vomited almost continuously. Her eyes were sunken and her skin was noticeably jaundiced. She was extremely dyspneic, nervous and weak. Her pulse was 120 per minute. Percussion of the chest revealed no dullness but on auscultation sibilant and sonorous râles were heard. A rounded mass was felt at a level with the upper edge of the symphysis pubis, and on bimanual examination this mass was found to be softened symmetrical, insensitive, and continuous with the slightly softened cervix. I made a diagnosis of intra-uterine pregnancy of two or three months' duration, complicated by pernicious vomiting.

I had noted that Mrs. B. had a dread of another

pregnancy. On announcing my diagnosis, she was incredulous, remarking that she had menstruated while in the hospital and again within the past few days. The nurse in charge of her during this time had seen no evidence of menstrual discharges. As the patient was not convinced that she was pregnant, I requested consultation. The consultant agreed with my diagnosis.

TREATMENT AND PROGRESS

All food by mouth was stopped until the patient had ceased vomiting for twenty-four hours. February 11, a soapsuds enema was administered to evacuate the lower bowel, and shortly afterwards a solution of sixty grains of sodium bromide dissolved in twelve ounces of water was administered by proctoclysis every four hours. Twenty-four hours after this treatment was begun, the patient had ceased vomiting, she had slept several hours and felt better. Forty-eight hours after the treatment was instituted, the dose of sodium bromide by rectum, was reduced to forty grains dissolved in eight ounces of water every four hours. Buttered toast and jelly were given by mouth and one and one half hours later a cup of black tea. The diet was varied according to the patient's desires, fluids being given one and one half hours after solid foods. February 15 the dose of the sodium bromide by rectum was reduced to twenty grains dissolved in four ounces of water every four hours and was discontinued February 19; on that day an asthma remedy was given by mouth and retained. February 20, the patient sat up in bed and the following day got up in a chair. February 21, a laxative was administered by mouth.

During the first week of the treatment some relief of her dyspnea was obtained by the hypodermic administration of adrenalin, ephedrin sulphate, and asthmolysin, and by steam inhalations with the addition of tincture of benzoin.

This patient ceased vomiting twenty-four hours after the institution of treatment and has had no recurrence during the ensuing six weeks. Her pulse ranged from eighty-four to one hundred per minute during the treatment and respirations twenty-two per minute. She now feels perfectly well except for her chronic asthma. The pregnancy is progressing normally.

This is the eighth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

By LEO G. RIGLER, M. D.

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THE THORAX

DISEASES OF HEART AND AORTA

A. *Methods of Examination*

1. *Fluoroscopy.* This reveals the size and shape of the heart inaccurately but can determine its position, any gross deviations from the normal, and the character of the pulsations.

2. *Orthodiagraphy.* This is a fluoroscopic method, whereby, with the use of only a central beam of rays, the outline of the heart can be accurately delineated and its size accurately determined.

3. *Teleroentgenography.* By this method a film of the heart is made with the x-ray tube at a distance of six feet or more. Usually the postero-anterior position is used and a picture of the anterior surface of the heart is obtained. Lateral and oblique view are also used to determine the enlargement of the individual chambers and to study the aorta throughout its course.

4. *Fluoroscopic and film examination* with the aid of the *visualized esophagus*. The latter is filled with a suspension of barium sulphate and its relationship to the heart and aorta determined.

B. *Normal Heart and Aorta*

1. *Anatomy and Relations.* The heart appears as a very dense shadow in the middle of the chest, clearly shown in sharp contrast with the marked radiability of the air-filled lungs. The right border is composed of two curves, one extending from the cardio-phrenic angle to a notch in the contour and representing the right border of the right auricle. The upper curve extends from this notch to a point just below the clavicles where it curves to the left. This is the ascending aorta and it forms the arch above. To the right of and above the arch the shadows of the large vessels of the neck and of the superior vena cava can be seen. On the left border of the heart, there are usually three curves, occasionally four. The superior one is short and represents the arch of the aorta passing into the descending aorta, the shadow of which can sometimes be seen through the heart, lying alongside the dorsal spine. The second curve represents the conus pulmonalis. Rarely another very small curve is present below

this caused by the appendage of the left auricle. The most inferior curve is a large one and represents the left border of the left ventricle. The left border of the heart as a whole is slightly concave in the average normal individual.

In the right lateral or right oblique position the posterior and anterior walls of the heart are shown. The arch of the aorta curves posteriorly and the descending aorta can be seen lying just anterior to the dorsal spine. Anterior to this is the esophagus crossing the arch of the aorta and lying about two cm. anterior to the spine throughout its extent. The left auricle is shown lying just anterior to the esophagus and on the posterior wall of the heart. The esophagus lies to the right of and posterior to the arch of the aorta, to the right of and anterior to the descending aorta, and to the right of and posterior to the left auricle.

2. *Normal variations.* The shape and size of the heart vary with the type of individual. The asthenic type tends to have a small, long, narrow heart, the "drop-heart." Its total transverse diameter is from 30 to 40% of the transverse diameter of the thorax, (the cardio-thoracic ratio) and its left border is usually somewhat convex. The sthenic type of individual usually has a heart whose cardio-thoracic ratio is from 40 to 50%, which is more prominent on the left than right, and has a slight concavity of the left border. The hypersthenic type has a shorter, broader heart which may be markedly concave on the left border, may have a prominence of the left ventricle and have a cardio-thoracic ratio of 55% or less.

With deep inspiration the heart becomes long and narrow, with deep expiration it becomes short and broad. The heart size will appear smaller if it happens to be in systole when the exposure is made.

The arch of the aorta is prominent in the hypersthenic type of individual, in the aged, and when the curve of the arch is essentially a medio-lateral one.

C. *Technical points and methods of measurement.*

1. It is advisable to have the patient in *mid-respiration* when the films are taken to avoid the

extreme changes which occur with either deep inspiration or expiration.

2. *One second or more* should elapse during the exposure to make certain that the heart has passed through its diastolic phase.

3. *Methods of measurement and normal variations:* The transverse thoracic diameter is taken from the inner chest walls at the level of the diaphragms. This varies in the adult from 22 cm. to 35 cm. The midpoint of this line is found and a line drawn perpendicular to a vertical line through it to the extreme left border of the heart and also to the extreme right border. These are respectively the median left (ML) and median right (MR) measurements. The former varies from 7 cm. to 9.5 cm., the latter from 3 cm. to 4.5 cm. in the adult. The total of these is the total transverse diameter of the heart, and the ratio of this to the transverse thoracic diameter is the cardio-thoracic ratio. A third line is drawn from the apex of the heart to the junction of the right auricle and the ascending aorta, the longitudinal diameter, which is from 1 cm. to 4 cm. longer than the total transverse. The transverse diameter of the arch of the aorta is measured from the left border of the esophagus to the left border of the arch. This is from 2 to 4 cm. The right oblique measurement, a perpendicular line from the cardio-phrenic angle to the longitudinal diameter, and the left oblique, a similar line from the peak of the conus pulmonalis to the longitudinal diameter may also be made. The left oblique is normally 2 cm. shorter than the right.

This method of determining whether or not the heart is enlarged is no doubt inaccurate because of the wide variations in the normal cardio-thoracic ratio. Other methods of measurement are, however, too complex for practical work and probably not much more accurate. It must be borne in mind that in the early stages of heart disease, where the total increase in size is minimal, changes in shape are much more dependable as an indication of abnormality.

D. Pathological Changes in the Heart and Pericardium

1. *Mitral regurgitation.* A slight increase in the ML is shown with a slight prominence of the left median curve (the conus pulmonalis). A moderate enlargement of the left auricle may be present.

2. *Mitral stenosis.* A marked bulging of the left median curve, a slight enlargement of the MR, no enlargement of the ML and a marked enlargement of the left auricle is shown. The latter causes a distinct compression and displacement of the esophagus posteriorly for a length of about 5 cm. extending down to about 2 cm. above the diaphragm. This is best shown in the

right lateral position. Occasionally the left auricle displaces the esophagus to the right also and if it becomes very large its shadow may be seen to the right of the right auricle and above it. The auricular appendage may produce a fourth curve on the left border between the left ventricle and the conus pulmonalis. The root shadows of the lungs will be greatly enlarged due to the congestion of the vessels.

3. *Double mitral.* Gives the same findings as above except that there is also some enlargement of the ML, the amount depending on whether the regurgitation or stenosis predominates. In general the striking change in the contour of the heart is the marked convexity of the left border and the heart as a whole assumes a square shape.

4. *Aortic or hypertension type.* It is difficult to distinguish cardiac enlargement due to disease of the aortic valves from hypertensive disease. Slight differences may exist but they are not diagnostic.

a. *Aortic stenosis.* The left ventricle tends to be very rounded off, the apex blunt, the aorta may be large or small.

b. *Aortic regurgitation.* The left ventricle is dilated, a "boot" shape to the heart, the ML being greatly enlarged, the concavity of the left border being striking. The apex goes downward and the aorta is usually dilated.

c. *Hypertensive disease.* Tends to give three types of change and these may be simulated by aortic valvular disease also.

(1) *First stage.* Hypertrophy alone which manifests itself merely as a rounding off of the left ventricle but no particular increase in size.

(2) *Second stage.* Dilatation of the left ventricle producing also the "boot" shape, the marked left concavity, the increased ML.

(3) *Third stage.* Dilatation of all the chambers is present. There is an enormous enlargement of the heart with increased ML and MR. The concavity of the left border is diminished although the left ventricle remains the most prominent.

d. *Glomerulonephritis* may produce a left sided enlargement similar to hypertension in the first or second stage but the heart never becomes so large.

5. *Combined mitral and aortic valvular disease.* At times this gives a typical picture, there being a marked bulging of the conus pulmonalis plus a rounding off and dilatation of the left ventricle with more marked increase in the ML than

ordinarily occurs with mitral disease. Frequently the shape of the heart is not typical and may look like either a mitral or aortic type.

6. *Tricuspid and pulmonic lesions.* Right heart enlargement with especially marked increase of the MR and bulging of the right auricle but no left auricular enlargement are present.

7. *Right heart hypertrophy and failure.* This occurs with chronic lung conditions. There is an atypical appearance and the right side is chiefly enlarged without enlargement of the left auricle. The esophagus is not displaced as in mitral disease.

8. *Generalized cardiac enlargement.*

- a. With valvular lesions and severe myocardial failure the heart assumes a triangular shape with marked enlargement both to the right and left and lack of the rounded character on either side.
- b. Toxic myocardium gives a flabby heart, with a narrow base and marked enlargement of the distal portion especially to the right.
- c. Hyperthyroidism gives either a globular shaped heart or an increase in the size of the conus pulmonalis but little or no general increase in size.
- d. Myxedema heart. This presents frequently a typical picture somewhat resembling the toxic myocardium. The heart is flask shaped with a narrow base and very broad inferior portion, the right side being enlarged beyond its usual proportion to the left. The heart appears toneless. Marked changes in size after the administration of thyroid extract are noteworthy.

9. *Congenital heart disease.* The roentgen findings are characteristic in only two types.

- a. Patent Ductus Botalli gives a great dilatation of the conus pulmonalis, beyond that of mitral stenosis, and some enlargement to the right.
- b. Transposition of the great vessels gives a marked enlargement to the right, a rotation of the cardiac shadow, and a distortion of the base.

Although the x-ray appearance of the congenital heart is usually not sufficiently characteristic for diagnosis, study with the visualized esophagus may be of considerable value. Congenital lesions may simulate mitral stenosis in the postero-anterior view but will usually not show esophageal displacement while mitral stenosis usually will.

10. *Pericardial effusion.*

a. In the film the following findings are of importance:

- (1) A flask shaped or triangular shaped cardiac shadow.
- (2) A great increase in size, both to the right and left.
- (3) Unusual broadening at the base especially in supine position.
- (4) Loss of chamber markings so that it is impossible to distinguish the various curves of the cardiac borders.
- (5) In the lateral view obliteration of the posterior cardio-phrenic angle.

b. On fluoroscopic examination in addition the following findings:

- (1) Lack of pulsation at the extreme periphery of the cardiac shadow.
- (2) Change in contour of heart with change in position, the base being broader when supine, the apex broader when upright.
- (3) No change in contour with respiration.

11. *Adhesive pericarditis.*

a. In the film the following findings are present:

- (1) An atypical shape of the cardiac shadow with diffuse enlargement.
- (2) Dense bands seen running from the cardiac borders to the diaphragms or pleura.

b. On fluoroscopic examination the following findings:

- (1) Paradoxical movement of the heart shadow with respiration.
- (2) No change in contour with respiration.

12. *Summary of value of x-ray examination.*

In the consideration of the x-ray findings in heart disease it must be borne in mind that these are entirely dependent upon the fact that certain chambers of the heart enlarge with certain types of abnormality. For example, with mitral stenosis the left auricle and right ventricle enlarge; with aortic stenosis the left ventricle enlarges, etc. If for any reason the chamber enlargement does not follow the usual rules the x-ray findings will give an inaccurate result.

In general, the roentgen examination of the heart and pericardium is of importance practically as well as for the purpose of learning the pathological physiology of the heart. It is a valuable aid in determining whether the heart is abnormal, what type of pathology is present, and how far the lesion has progressed. Repeated examination may determine the effects of treatment and the

progress of any case as shown by the changing size of the heart.

E. *Pathological Changes in the Aorta*

1. *General considerations.*

- a. General dilatations of the aorta manifest themselves by a diffuse increase in the shadow shown both in the antero-posterior and lateral views. Localized dilatations usually indicate aneurysms.
- b. Enlargements of the ascending aorta are best shown with the patient in the left oblique position, i. e., the left anterior portion of the chest toward the film, the right posterior toward the tube. Enlargements of the descending aorta are best shown in the right oblique position. Enlargements of the arch are shown in all three positions.

2. *X-ray findings.*

- a. The aorta appears diffusely enlarged with large hearts and in the hypersthenic individual.
- b. With hypertension the ascending portion may be especially dilated.
- c. With aortic regurgitation the whole aorta is larger than normal.
- d. Senile ectasia or arterio-sclerotic changes produce a lengthening and tortuosity of the aorta. The arch becomes very prominent although its actual size increases only a little above 4 cm. The whole aorta becomes more visible and the descending portion can be clearly visualized in the oblique and lateral positions. There is no increase in the antero-posterior diameter of the arch.
- e. Calcification also occurs and is manifested by a thin semilunar shaped disc of increased density at the periphery of the arch on the left side. Occasionally plaques of calcification can be seen anywhere in the wall of the aorta always at the outer borders where it appears as a thin line of density.
- f. Luetic aortitis produces a diffuse enlargement especially marked in the ascending portion and showing a lack of definition in the outline of the various parts of the aorta.
- g. Aneurysm. The x-ray diagnosis is of great importance as many aneurysms cannot be made out on physical examination. This produces a localized enlargement usually well demonstrated. The enlargement may be either medio-

lateral or antero-posterior so examination must be made in all positions. The important findings are:

- (1) An aneurysm of the ascending aorta produces enlargement to the right and anterior.
- (2) An aneurysm of the arch enlarges in all directions.
- (3) An aneurysm of the descending aorta produces enlargement to the left and posterior.
- (4) The shadow may show distinct expansile pulsation. Transmitted pulsation is frequent and not diagnostic while expansile pulsation is.
- (5) No pulsation may be present if the aneurysm is thrombosed.
- (6) The shadow cannot be separated from the remainder of the aorta in any position. This should be the strongest distinguishing feature from tumors which can be separated off.
- (7) The heart may be enlarged if the aneurysm is near the root of the aorta. It may be small or normal if the aneurysm is some distance from the root.
- (8) Aneurysms of the descending aorta will be hidden by the cardiac shadow and can only be made out by rotation of the patient in various directions.

3. *Esophageal changes.*

- a. Changes in the ascending aorta produce no effect upon esophagus.
- b. Arterio-sclerotic changes cause a deeper indentation by the arch upon the esophagus and may produce marked tortuosity of the esophagus best shown in the left oblique position.
- c. Aneurysms of the arch displace esophagus to the right and posteriorly.
- d. Aneurysms of the descending aorta displace it to the right and anteriorly.
- e. Rarely an aneurysm of the arch may produce marked displacement to the left while an aneurysm of the descending aorta may displace to the right.

4. *Value of x-ray examination.*

Roentgen examination in diseases of the aorta, especially aneurysm, is of supreme importance. Frequently it is the only method by which small, and even massive, aneurysms may be discovered.

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—31—188.

The case is that of a girl, 12 years old, admitted to hospital January 23, 1931. The child was delivered by instruments but was entirely normal at the time of birth. She was breast fed for 18 months. At the age of eight months she fell about eight feet and was unconscious for three or four minutes afterwards. Fracture of the left clavicle occurred in the fall. The mother states that the child had moved her head slowly since the accident.

Present illness began in 1925 at the age of 7 years with attacks of vomiting. These attacks at first occurred at intervals of about a week and usually after riding from school on the bus. The vomiting attack would last for ten or fifteen minutes. She had slight frontal headache at times during this period. After an attack she would feel weak and nervous and refuse to eat supper. The next morning she would commonly feel well and go back to school, but often she stayed out of school because of severe frontal headache. During the summer vacation of 1925 she did not vomit but had headache on hot days. She received good grades in school at this time. In 1926 she began to have spells of nocturia. Frequently she would be up twelve times during the night. She would take a pitcher of water to bed with her sometimes. Tonsillectomy in 1927. Measles in 1929. December 26, 1930, shifting epigastric pain was first noticed. The headache had increased in intensity and the patient was frequently tired. There was also pain in the back of her neck. Vomiting became marked again. On one occasion she vomited all night long. Her vision became dim. The face was pulled over to the right side and she complained of stiffness of the tongue. January 21, 1931, complained of a feeling of fright; everything turned black before her eyes and she suddenly became stiffened out for three or four minutes. Mother noted protrusion of the eyeballs. The next morning a physician found that she was unable to see his fingers held before her eyes. She also failed to see an electric light bulb held in front of her. No mental deterioration at any time.

On admission January 23, 1931, examination showed an undernourished, fairly well developed child, lying quietly in bed, apparently in no distress; eyes protruded; pupils dilated; could see things dimly if placed within a few inches of her eyes; could not count fingers. Extraocular movements were limited. Bilateral choked discs; right 5 diopters; left 1.3 diopters. Visual fields could not be obtained. Bilateral cervical adenopathy. Heart, lungs, and abdomen negative. Knee jerks and

biceps reflex diminished. Suggested left Babinski. Past pointed to left with right hand. Tone poor. Atrophic gait. Romberg suggested. Temperature 99.6°; pulse 112; respirations 22. Diagnosis, brain tumor.

January 26, x-ray showed marked evidence of increased intracranial pressure (very striking erosion of inner table from convolutional markings). Temperature, pulse, respiration normal.

January 27, x-ray showed sella turcica distinctly enlarged. The posterior clinoid process showed evidence of erosion. Complained of painful urination. Temperature, pulse, respirations normal. January 29, neurologic consultation. Practically totally blind. Bilateral exophthalmos. Marked right third and sixth nerve involvement. Deep reflexes absent. Moderate ataxic gait with probable pulsion to the right. No adiadokokinesis. Probable tumor of brain involving posterior part of mid-brain, either involving the brachia conjunctiva, or spreading anteriorly from the vermis. Pineal tumor could not be ruled out. Ventriculography indicated.

January 30, ventriculography. A trephine opening was made in the posterior occipital region on both sides. A needle was inserted directly into the ventricles after the method of Dandy. X-ray showed ventricles distinctly smaller than normal with the right displaced upward and well over to the right; it was smaller than the left. Appearance suggested a mass below and between the ventricles, more to the right than to the left. 12:30 noon, patient returned from the operating room in good condition. 3:30 P. M., irrational and required restraints. 7 P. M., screaming, kicking, and throwing self about. Temperature 100°; pulse 115; respirations 22. Codein sulphate gr. $\frac{1}{8}$ (M). 9:15 P. M., amytal gr. 1 ss. 10:30 P. M. chloral hydrate gr. x (M). 11 P. M., chloral hydrate gr. x (M).

January 31, 2:50 A. M., morphin sulphate gr. $\frac{1}{8}$ (H). Pulling at dressings. Temperature 101°; pulse 120; respirations 26. 3:25 A. M., breathing deep and stertorous; color poor. 4:15 A. M., gastric lavage; 200 c.c. of twelve and one-half per cent sugar solution by gavage. 6:15 A. M., respirations 16 with long pauses. 7 A. M., respirations slow and irregular. Temperature 102°; pulse 120; respirations 13. 7:30 A. M., respirations labored and slow. Patient put into Drinker respirator. 8 A. M., caffein sodium benzoate gr. vii ss (H). 8:20 A. M., caffein sodium benzoate gr. vii ss (H). 8:25 A. M., adrenalin one-half c.c. (H). 500 c.c. of 10 per cent glucose intravenously. Wound opened and 80 c.c. fluid withdrawn. 9:51 A. M., adrenalin M. v (H). Dressings changed. 10 A. M., adrenalin M. iii (H).

Pulse 128, poor quality. 10:15 A. M., pulse stronger; color poor. 10:30 A. M., pulse irregular and weak. Death 10:42 A. M., January 31, 1931. Diagnosis, tumor of brain.

Post-mortem report. Brain moderately dry; flattening of convolutions; under surface of brain shows multiple hemorrhagic raised nodular tumor masses over cerebellum, temporal lobes, and frontal lobes. Two nodules in the region of the olfactory bulb. Palpation of the brain reveals numerous nodular masses over the base, more marked in the middle and posterior portions; a few hemorrhagic nodules over the lateral surfaces of the anterior portion; a few nodules on the superior surface of the cerebellum. A large tumor in the central part of the cerebellum; flattening of the optic chiasma, the pituitary gland, and erosion of the dorsal clinoid processes. No disease of the organs of the thorax or abdomen.

Microscopic diagnosis. Medulloblastoma of the cerebellum with metastases to the under surface of the brain and to the brain substance.

Autopsy—31—439.

Male, 74 years of age. Last admission March 6, 1931. Between the ages of 7 and 10 years he was in bed a long time with multiple sinuses in the region of the left hip. These healed but there was a persistent shortening of the left leg.

In 1905 at the age of 48 he first noticed epigastric pain which came on about a half hour to one hour after meals. It was sharp, severe, and was located immediately below the xiphoid process. He vomited occasionally but had no hematemesis. The pain was relieved by vomiting or by the use of soda. In 1906 a gastroenterostomy was done at the Mayo Clinic. He was well from 1906 to 1922 at which time the epigastric pain recurred. The pain was sharp and severe and was brought on particularly by heavy foods. He vomited repeatedly. He had gas on the stomach and belched frequently. There was no constipation.

He was first admitted to this hospital February 28, 1923, complaining of epigastric pain, vomiting, and belching of gas. At this time his urine was negative. Hemoglobin 79 per cent; red cells 3,860,000; white cells 7,000. Wassermann negative. Blood urea nitrogen 25.2 mg. X-ray of the stomach showed a functioning gastroenterostomy. No evidence of carcinoma. The patient was placed on a modified Sippi diet and improved notably; gained 8½ lbs.

He returned to hospital March 6, 1931. He stated that he had never been free from epigastric pain, nausea, and vomiting for any considerable length of time. In January, 1931, he had an illness which was called influenza. His symptoms were much worse during this illness. On February 15 he had become practically helpless; there was marked loss of weight; pale yellowish skin but no true jaundice; irrational at times; so weak that he could not walk about the room.

Upon admission, March 6, he vomited whenever he took anything by mouth. The stools were dark and semisolid. Blood pressure 94/70. Pulse 85. Patient was in a stuporous condition; marked anemia, emaciation, and dehydration. Answered questions slowly and vaguely. Painful swellings in both submaxillary regions, apparently involving submaxillary glands. Fecal impaction. Prostate normal. Marked ichthyosis of both legs and feet. Urine contained sugar; no albumin. Hemo-

globin 38 per cent; red cells 3,270,000; polymorphonuclears 72 per cent; lymphocytes 28 per cent; marked polychromatophilia, anisocytosis; slight anachromasia and poikilocytosis. Stool, benzidin strongly positive. Temperature 100.6°; pulse 105; respirations 20. Patient very weak and exhausted. Blood urea nitrogen 180; icteric index 5. No free HCl in the gastric contents; benzidin strongly positive. On March 8 blood urea nitrogen 58.9 mg.; chlorids 5.25. March 9 patient was stuporous. Death March 13.

Post-mortem report. Lobar pneumonia of the right upper lobe. Gastroenterostomy opening located upon the greater curvature about 6 cm. above the pylorus; stoma 3 cm. in diameter and appears to be functioning well. No fresh ulcers in stomach or duodenum. Old healed ulcer of the duodenum just below the pylorus. Some blood in the stomach and duodenum but bleeding point not found.

Diagnosis. Lobar pneumonia; old gastroenterostomy; parotitis.

Comment. The cause of the epigastric pain and the vomiting is not clear. There are no recent ulcers. The gastroenterostomy opening was apparently functioning normally.

Autopsy—31—340.

The case is that of a boy 28 months old who was admitted to hospital at 2:20 P. M. February 20, 1931 with the history that two weeks previously he had started having nausea and vomiting; he became dehydrated and weak. He had a convulsion on the afternoon of February 19 and became unconscious that evening.

Physical examination showed twitching of the right eye and the right side of the face. The pupils did not react to light, were dilated, and unequal. The feet were inverted. Reflexes were absent. There was slight rigidity of the neck. The hands and feet were spastic. Later, rales developed throughout the chest. The patient's ears were negative throughout the course of the illness. The mother gave a history of pulmonary tuberculosis.

Spinal puncture was done. The fluid was slightly turbid and showed 200 cells with approximately 70 per cent of lymphocytes. There was a trace of globulin. Mantoux test was negative. The urine showed a trace of albumin, a few hyaline casts, and pus cells. The blood showed hemoglobin 86 per cent; leucocytes 20,800 with 89 per cent polymorphonuclears, 6 per cent lymphocytes, and 5 per cent monocytes. X-ray of the lungs showed calcified nodules and pneumonic patches extending out from the hilus. The temperature ranged from 98.3° to 104°; pulse 110 to 170; respirations 25 to 30. Clinical diagnosis: tuberculous meningitis.

Post-mortem report. The body is somewhat emaciated. No peritonitis. No pleurisy. Cloudy swelling of the myocardium. The right lung weighs 130 grams; areas of tuberculous pneumonia about the hilus; calcified nodules in the parenchyma near the hilus. The left lung weighs 90 grams; the appearance is similar to that of the right. The spleen weighs 26 grams; numerous miliary tubercles. The liver weighs 492 grams; numerous miliary tubercles. Cloudy swelling of the kidneys. Tuberculous meningitis.

Diagnosis. Generalized miliary tuberculosis and tuberculous peritonitis.

Comment. Tuberculous meningitis is practically always part of a general miliary tuberculosis. The calcified nodules in the lungs show that the tuberculous lesion had been present for some time. Skin tests are usually negative in acute miliary tuberculosis.

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THE SOCIAL WORKER

When a new star is discovered in the firmament, the laws and regulations governing its harmonious movements and relations to others, become at once an interesting subject for investigation and determination. In scanning the sky, not so many years ago, there appeared the Social Worker, whose sphere and orbit, functions and purposes, have intrigued many curious and conscientious observers, but discussions would indicate that entire accord is still lacking.

It would be highly desirable if all might have the same conception, and agree upon the exact status of this new arrival among us. It would make for better mutual understanding and greater helpfulness. The very meaning of the word *social* is suggestive of mutual co-operation and friendly intercourse, which, in turn, implies agreement and harmony. In the past this has been deplorably lacking in many instances where the medical profession has been concerned. We were much pleased, therefore, to find that the entire May number of SOCIAL ECONOMY was devoted to "Ethics of Social Agencies" and "Answers to Questionnaire on the Ethics of Professional Social Workers." There were many articles, each dealing with relations to other organizations and individuals but imagine our disappointment and surprise to find no mention of the medical profession whatsoever.

On second thought, however, this apparent omission may not be an oversight at all but rather a courteous deference to the medical profession to lead the way. We should assume every opportunity to guide social agencies and co-operate with workers so that an agreeable and harmonious relationship may ripen between us through mutual understanding of each other.

A. E. H.

PROPHYLAXIS FOR OPHTHALMIA NEONATORUM

The question of prophylaxis for ophthalmia neonatorum is the subject of an editorial in the May 30th number of the Journal American Medical Association. Briefly, both branches of the Illinois Legislature passed a compulsory prophylaxis law requiring the installation of a prophylactic at birth. The governor of Illinois vetoed the bill on the advice of the attorney general, that the state had no authority to compel the installation of the prophylactic. The house passed the bill over the veto but the senate sustained it by a narrow margin.

This naturally brings to our attention the fact that Minnesota has no compulsory prophylaxis law. It had at one time but it was repealed some time ago and now a prophylactic installation cannot be used against the objection of the parents. This brings up the question of personal liberty again which has so vexed the public in many other matters.

Inasmuch as we cannot compel prophylaxis, we should enlighten parents and ourselves as to just what constitutes ophthalmia neonatorum. This is a general term applied to conjunctivitis in the new-born and, while the majority of severe cases are due to the gonococcus, it may be caused by various morbid germs, i. e. colon bacillus, pneumococcus, etc., coming in contact with the eyes during and shortly after delivery.

Some parents, conscious of their own probity, and believing that the prophylaxis is directed against one organism only, object to the use of it on the grounds of its throwing suspicion on them. If it were more generally known that prophylaxis is directed against any or all infective agents that may affect the eye and that there is, perhaps, no other instance in which carrying out of prophylactic treatment yields such constantly beneficial results as in preventing serious inflammation of the eyes of new-born, objection would

probably be made only by those who object to all drug therapy.

When we consider that in 1907 twenty-seven per cent of all blindness in children was caused by ophthalmia neonatorum and that the total has been reduced to seven per cent in 1930, it is evident that if compulsory prophylaxis is not adopted, we cannot pay too much attention to the proper education of the public in the matter to the end that a still greater reduction in this still high morbidity may be accomplished.

It is probable that never in the history of mankind has the general public given such an attentive ear to authoritative ideas regarding general health as it does at the present time.

The medical press does not reach the public to any extent but the secular press could do a vast amount of good if a thorough explanation could be passed along to the general public by the medical profession by medical authority. It would, of course, need to emphasize, first, the perfect safety of the prophylactic treatment; second, give the public to understand fully that it is no reflection upon the character of any person, simply a safe measure to prevent serious results from infection, specific or otherwise; third, it could point out the percentage of blindness and the steady decrease of blindness resulting from inflammation of the eyes of the new-born, in proportion as prophylactic treatment is used.

Coercion is an essential element in government, always burdened with painful qualities, and while the end is obtained by it, a vastly happier ensemble is the result when education accomplishes the same end. Science, at times, has gone too fast, so fast, indeed, that it has dropped important links in the chain. The layman knows this as well as the scientist and when the layman accepts a scientific fact, he naturally, wants standardized, composite authority for his belief.

Articles the press has published in our magazines have done good but they should be from some authoritative medical body that the public will accept. Recently a coast to coast hook-up gave a broadcast on the subject, requesting that listeners send in for pamphlets dealing fully with the matter. Persons from only three states responded.

To be fully accepted and appreciated, information on the subject should be passed to the Associated Press by a committee appointed by the American Medical Association, the American Academy of Ophthalmology or the American College of Surgeons or some other outstanding medical society.

The public weigh and pass on medical opinions

carefully and it accepts and acts on them when they are authoritative. The public of today is a public far advanced over the public of twenty years ago. Education is a very effective law but the educational advice must be of such a character that it will be accepted.

At this time about thirty-four states furnish silver nitrate to midwives and physicians; fourteen states have no such provisions. Silver nitrate in wax ampoules with instructions as to use is the customary package.

Nothing short of a compulsory law will fill the requirements of the situation in a legal way. This is hardly possible. Can united effort bring education to a point where it will function satisfactorily?

C. Da. W.

DR. L. A. FRITSCHÉ

Dr. L. A. Fritsche, New Ulm, Minn., an outstanding figure in medical and political affairs of the community and state for many years, died at his home, last month. He was 69 years old.

Dr. Fritsche was head of the Fritsche Clinic, served as Mayor of New Ulm five terms and was an unsuccessful candidate for Governor and for Congress on the Farmer-Labor ticket.

In the early part of November, while giving a political address at Essig, Dr. Fritsche collapsed, suffering a slight paralytic stroke. He had been ailing since.

A native of Nicollet County, Dr. Fritsche taught school in that county for several years. He took a medical course at the University of Michigan and subsequently studied medicine at the University of Berlin.

After he received his degree in Germany in 1890, he moved directly to New Ulm and resided here continuously.

He was a member of the State Board of Medical Examiners from 1900 to 1902 and served as a surgeon on the staff of the Minnesota National Guard for many years.

Associated with Dr. Fritsche in his clinic are his three sons, Dr. Albert, Dr. Clar and Dr. Theodore Fritsche. Besides these, he is survived by his widow and two daughters, Miss Louise Fritsche, who taught in the South St. Paul high school and is studying at Columbia University, and Mrs. H. W. Bond of New York City.

Program of the Meeting of the Montana State Medical Association Bozeman, July 8-9, 1931

PROGRAM

Wednesday, July 8, 1931

9:00 A. M.

Elks Club

ADDRESS OF WELCOME

Hon. Justin Smith, Bozeman

SALUTATION

E. R. Grigg, Bozeman

RESPONSE FOR THE ASSOCIATION

J. R. E. Sievers, Butte

REPORT OF THE SECRETARY-TREASURER

F. G. Balsam, Billings

ADDRESS OF THE PRESIDENT

Leroy Southmayd, Great Falls

Early Montana Medical History

H. W. Gregg, Butte

What's What and Why in Public Health Work

W. F. Cogswell, Helena

Sinus Disease

A. W. Morse, Butte

Stronger Batteries

Edith Lucile Brown, Helena

Secretary Montana Nurses Association

Vitamins A and B

Caroline McGill, Butte

The Early Diagnosis of Carcinomata

Pathologically and Clinically

Henry Schmitz, Loyolla University, Chicago
Cardio-vascular Lesions as Manifested in the
Fundus Oculi

George A. Suker, Chicago

Prolapse of the Uterus

Raymond E. Watkins, University of Oregon
Portland

Gastro-intestinal Disturbances in Infants

F. P. Silvernale, Great Falls

The Clinical Diagnosis of Toxic Goitre

L. T. Sussex Havre

The Obliteration Treatment of Varicose Veins and Ulcers

H. H. James, Butte

Factors in Maternal Mortality

T. J. Williams, Great Falls

Intravenous Urography

J. H. Harris, Great Falls

Heart Disease

Tom Walker, Great Falls

Physiology and Medicine

R. R. Sigler, Manhattan

General Information

Hotel accommodations may be secured by writing Dr. R. E. Seitz, Bozeman. State kind of room desired and the time of your arrival.

The meetings will be held in the Elks Club.

No paper, except that of the president and those of the guests, shall occupy more than twenty minutes in its delivery. The author is requested to hand the copy to the secretary.

All papers are open to discussion. Pick one of interest to you and come prepared to add your experience and thereby make the session of great value.

The Health Association of Montana will have its meeting July 6 and 7, 1931, in Bozeman at the Elks Club. Every physician is cordially invited to attend.

The announcement of the entertainments will be made Wednesday morning. They are many and varied, characteristic of Bozeman and you must not miss them.

Every doctor of medicine in Montana is urged to come to Bozeman and take part in this annual affair. If not a member of the association, that can be arranged with the secretary.

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PROGRAM OF THE WABASHA COUNTY MEDICAL SOCIETY

The Wabasha County Medical Society will hold its Sixty-third Annual Meeting at Lake City, Minn., Thursday, July 9, 1931.

Business Session—City Hall 11:30 A. M.

Dinner—Hotel Lyon, 1:30 P. M.

Courtesy of the Lake City members and affiliated dentists.

"Minnesota Wild Life in Motion Pictures"

Three Reels with talk by Professor Thomas S. Roberts, Director of the Zoological Museum, University of Minnesota.

Immediately following,

Boat ride for the ladies.

Medical program.

PAPERS

President's Address—"Further Report on Undulant Fever, with Three Additional Cases."

Dr. E. C. Bayley, Lake City.

"Tuberculous Salpingitis"

Dr. Alfred Belitz, Pepin, Wisconsin.

"Medical Policies Discussed at the 1931 County Secretaries' Meeting"

Dr. W. F. Wilson, Lake City.

EXECUTIVE OFFICERS

President—Dr. E. Covell Bayley, Lake City

Vice-President—Dr. W. B. Stryker, Plainview

Secretary—Dr. W. F. Wilson, Lake City

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. J. A. Malerich, formerly located at Richardton, N. D., has moved to Shakopee, Minn., and opened offices for general practice.

Dr. Peter Potter, Butte, Montana, is on a three months' vacation with his wife, visiting the leading cities of Europe.

Dr. J. M. Allen, Rosholt, S. D., has been spending several weeks in Minneapolis, attending the different clinics of the city.

Dr. L. N. Grosvenor, Huron, was the South Dakota delegate that attended the last annual meeting of the American Medical Society at Philadelphia.

The Montana Public Health Association will hold its annual meeting at Bozeman, on July 6th and 7th. A fine program is being arranged for the meeting.

Dr. E. G. Harris, who has been in active practice for several years at Harlowton, Mont., has moved to Havre, and purchased the Havre Clinic of that city.

Dr. and Mrs. D. J. Carr, Jamestown, N. D., were among the large list of visitors who attended the annual meeting of the American Medical Society at Philadelphia.

Dr. R. J. Williams, who has been in active practice at Walker, Minn., for the past 15 years has sold his home, office and practice to Dr. J. J. Killion of Minneapolis.

Dr. William A. O'Brien, of the University of Minnesota Medical School, will broadcast a radio talk over the station WCCO on July 1st, his subject being "Safety First for the Fourth."

Contracts have been made for two additions to the U. S. Veterans' Hospital at Fort Harrison, Montana, at a cost of \$800,000. Dr. H. C. Watts is the medical officer in charge.

Dr. H. T. Skovholt, Williston, N. D., is on a sixty day auto trip, visiting the leading cities ending up at San Francisco. His wife and four children are with him on the trip.

Many counties throughout Montana, are organizing County Committees to co-operate with state officers in order to improve health and sanitation among children.

Dr. J. C. Michael, Minneapolis, were among the number who presented papers at the recent annual meeting of the American Medical Society.

Dr. Michael's paper treated on "Cerebellar Apoplexy."

Mrs. James Blake, wife of Dr. James Blake, Hopkins, Minn., was elected one of the vice presidents of the Woman's Auxiliary of the American Medical Association at Philadelphia, last month.

Dr. E. Starr Judd of the Mayo Clinic, reveals a viewpoint of the doctor's patient when he urges medical men to speak to laymen in language that they can understand, when discussing disease. Dr. Judd says:

Dr. J. A. Myers of Lymanhurst School for the Tuberculous and member of our own Editorial Board, addressed the National Conference at Minneapolis, on June 15th, on "Sound Development for the Future."

Dr. C. E. Stackhouse, Bismarck, N. D., has been confined in a local hospital where he underwent an emergency operation for appendicitis, is rapidly recovering and will be able to resume practice in a short time.

Dr. P. S. McIntyre, who has been in active practice at Bradley, S. D., for nearly a quarter of a century, has purchased the Peoples State Bank Building and will remodel the same for a private hospital.

Nearly every hospital of South Dakota was represented at their annual meeting held at Madison, last month. Among the principal speakers were Dr. Chas. Moots, Chicago, Dr. W. A. Rohlf, Waverly, Iowa, and Dr. Geo. Campbell, Huron, S. D.

Dr. John C. Boehm, who has been in practice at St. Cloud, Minn., for nearly 40 years, died last month at the age of 71 years. Dr. Boehm was a graduate of the University of Minnesota Medical School and had always taken an active part in the state and county medical societies.

Dr. A. E. Smith, Minneapolis, shooting a net 70 with a handicap of 20, won the Hennepin County Medical Society golf tournament at the Country club, last month. Drs. T. W. Weum, Leo Murphy and W. H. Fink tied for the blind bogey honors with 79s.

Dr. and Mrs. H. R. Hennesy, Los Angeles, Calif., are receiving many congratulations over the arrival of a fine baby girl, which they have named Helen Virginia. Dr. Hennesy was a graduate of the University of Minnesota Medical School, in 1930.

Dr. Fred L. Adair, formerly of Minneapolis, now of the Medical School of the University of Chicago, spoke on "What Should be Done to Guarantee Better Born Children" before the National Conference of Social Work in Minneapolis, June 18th.

Dr. Richard C. Cabot, Professor of Social Ethics, Harvard University and President, National Conference of Social Work, spoke at the Plymouth Congregational Church, Minneapolis, Sunday morning, June 14th, very interestingly on "The Intelligence of the Human Body."

About 2,000 representatives of Catholic hospitals in the United States and Canada were in attendance at the annual meeting held in the Twin Cities last month. The three main topics for discussion in general sessions included religious problems and methods of meeting them, medical, social service, and nursing education.

The North Dakota State Medical association, elected Dr. Henry M. Waldren, Drayton, president; Dr. Paul H. Burton of Fargo, president-elect; Dr. Jesse W. Bowen, Dickinson, and Dr. C. E. Stackhouse of Bismarck, vice presidents; Dr. Albert W. Skelsey of Fargo, secretary; and Dr. William W. Wood, Jamestown, treasurer.

Dr. Leo S. Burns, St. Paul, escaped with minor cuts and bruises when his automobile plunged over a 40-foot embankment just inside the Minneapolis city limits. After the accident, Dr. Burns extricated himself from the wreckage and made his way on foot to University hospital.

The regular June meeting of the Sioux Falls District Medical Society was one of the very best of the season, with two splendid papers being presented. Dr. T. J. Billion, Sioux Falls, whose subject was "Early Diagnosis of Carcinoma of the Gastrointestinal Tract," illustrated by lantern slides, and Dr. R. Reagan, Sioux Falls, on "Rupture of the Spleen," with a case report.

Formal presentation of the medals offered by the Southern Minnesota Medical Association, for the best scientific exhibits at the meeting of the Minnesota State Medical Association, will take place at Faribault on August 29th, at the meeting of the Southern Minnesota Medical Association. The awards go to Dr. William P. Herbst, Jr., of Minneapolis, for his exhibit on "A Study of the Motility of the Upper Urinary Tract Demonstrating the Diagnostic Features of Abnormal Motility Syndromes and the Indications of Drug Therapy and Renal Sympathectomy" and to Dr. R. K. Ghormley and Associates of Rochester, for their exhibit "A Study of Surgical Specimens of the Knee Joint."

"There was a time not long ago when the physician, in talking with the patient or with the relatives of the patient would use medical terms almost exclusively. He seemed especially happy if he could employ Latin expressions. It prob-

ably seemed to him to indicate great wisdom. However, I think it increased the uncertainty and mystery concerning medicine in the minds of the individual patients. One reason charlatans and irregular practitioners are able to continue in their practices is that there is still so much uncertainty and mystery about disease."

AUTO ACCIDENTS

The growing number of automobile accidents has become a financial menace to hospitals, Dr. W. J. Mayo, the distinguished surgeon of Rochester, recently declared.

"Many small community hospitals have been financially ruined by the burden of caring for accident victims who often, if not usually, do not pay for the service."

"Yet, public opinion requires that the community hospital accept whatever emergency cases comes to it.

"Even in large cities, most general hospitals do not maintain an ambulance service, but leave that service to the roadside good Samaritan or to public authorities in order to avoid financial embarrassment.

"The cost of such service should not be thrown on the hospitals. The manifest duty of governing bodies, municipal, county or township, is to assume this obligation and no longer act as parasitic agents, sponging on the helpless sick man in the hospital who is trying to meet his obligations.

"The public should either establish hospitals to be maintained entirely at the public charge or pay what it costs to have the poor taken care of in other hospitals.

"The high cost of hospitalization is a matter of concern to all good citizens. The sick man is a liability to his community but he may be converted into an asset if he is made well as quickly as possible. Let us not forget, that the hospital is a community necessity and not a profitable business."

The Fiftieth Annual Session of the South Dakota State Medical Association held at Aberdeen, June 1-2-3-4, 1931. This was a Joint Meeting with the North Dakota State Medical Association celebrating the Fiftieth Annual Session of organized medicine in the Territory.

The scientific program consisted of dry clinics each forenoon and papers in the afternoon of the three days.

The scientific exhibits were outstanding and well received.

Dr. W. A. Bates, President-Elect, was installed as President. Dr. J. R. Westaby, Madison, was made President-Elect. Dr. E. W. Jones,

Mitchell, Vice-President. Dr. J. F. D. Cook, Langford, was re-elected Secretary-Treasurer.

The next annual session will be held at Watertown, South Dakota. Date to be decided upon later by the Council.

The last meetings of the season for the Sioux Falls District Medical society was held last month at Sioux Falls.

The officers of the medical society announced that next season they will sponsor more elaborate programs, with speakers of greater renown obtained from larger cities. The past season was called highly successful by both organizations which held regular meetings throughout the winter months. Dr. O. L. Hanson, Valley Springs, is president of the medical organization and Dr. C. William Forsberg, Sioux Falls, is secretary.

Features of the final medical meeting were talks by Dr. T. J. Billion and Dr. R. Reagan. The former gave an illustrated lecture and emphasized the importance of the X-ray and the new methods in the treatment of cancer. Dr. Reagan spoke on "Rupture of the Spleen" and his talk was followed by discussion by the attending doctors on the increasing frequency of rupture of intestinal organs to persons who are injured in automobile accidents. This was chiefly attributed to the mounting number of such accidents.

CLASSIFIED ADVERTISEMENTS

Position Wanted

Experienced laboratory, X-ray and physio-therapy technician would like position in Hospital, Clinic or Doctor's office. Good references. Address Box 834, care of this office.

For Sale

A \$15,000 practice for sale in Western Minnesota, city of 5,000. Only five physicians all doing general practice. Will sell part or all of office equipment. Free introduction. Reason for selling, moving to West Coast. Terms given to suit buyer. Address Box 835, care of this office.

For Your Vacation

If you want some thing different, spend your vacation at The Open Door on beautiful Lake Le homme Dieu, near Alexandria, Minnesota. Quiet—Seclusive—Best things to eat—Mile from golf course—Fishing and swimming. Accommodations limited to 25. Address Mrs. Walter Campbell, Alexandria, Minn.

For Rent

Doctor's office occupied by prominent physician. Office elegantly equipped. Individual treatment room, laboratory, etc. Reception room is shared with dentist and other physician. A new up-to-the-

minute medical building, located in one of the best business intersections of good residential district. This is an unusual proposition and must be seen to be fully appreciated. Address Box 837, care of this office.

Practice for Sale

In finest farming community in Minnesota. Collections very best. Office equipment and home for sale. Reasonable terms. I am going abroad. Address Box 838, care of this office.

Associate Wanted

Wanted as associate, a physician with one or two years experience, with the view of gradually inheriting a \$15,000 cash practice in a city of over 15,000 inhabitants. Only man with vision need apply. Address Box 839, care of this office.

Wanted for Locum Tenens

Wanted to do locum tenens for about three months. Must be able to speak and understand the Scandinavian language. Rural community in Southern Minnesota. Address box 840, care of this office.

For Sale or Lease

General practice for sale or lease in southeastern North Dakota, County seat. Unopposed, large territory, good crops and roads. Well established. Specializing. Open after July 1st. Reasonable terms. Address box 841, care of this office.

Position Wanted

Experienced technician would like position in Clinic or physician's office as laboratory technician or office assistant or both. Good references. Address Mrs. Lillian Flindt, Route No. 1, c-o R. K. Mattice, Minneapolis, Minn.

Wanted to Buy for Cash

Used equipment, in good condition for a 20-bed hospital. Including beds, tables, operating tables, sterilizers, etc. Itemize what you have, giving prices on whole or part. Address box 843, care of this office.

Position Wanted

Would like position as secretary in physician's office, clinic or hospital. Capable stenographer. Good references. Address box 844, care of this office.

Location Wanted

Physician, 25 years experience, seeks office association with an established physician or surgeon practicing in Minneapolis. Address Box 845, care of this office.

For Sale

My entire M. D. office equipment, includes full line of instruments, operating tables, etc., and extensive library complete and up to date. Will sell at a big discount and give good terms. Wonderful opening for a good young doctor. Address box 846, care of this office.

THE JOURNAL- LANCET

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Minnesota, North Dakota, South Dakota, and Montana
The Official Journal of the
North Dakota and South Dakota State Medical Associations

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PROCEEDINGS OF THE HOUSE OF
 DELEGATES OF THE 44TH ANNUAL
 SESSION OF THE NORTH
 DAKOTA STATE MEDICAL ASSOCIATION

HOUSE OF DELEGATES

MONDAY EVENING, JUNE 1, 1931

The first meeting of the House of Delegates of the North Dakota State Medical Association, held at Aberdeen, S. D., at the time of the Joint Jubilee Convention with the South Dakota State Medical Association, June 1-4, 1931, convened on Monday evening, June 1, at 8:30 o'clock, the President, Dr. Andrew Carr, Minot, presiding.

THE PRESIDENT: Gentlemen, it so happens that neither Dr. Crawford, our Delegate to the A. M. A., nor Dr. Skelsey, the alternate, can be present at the A. M. A. meeting. Shall I appoint someone to go or shall the House of Delegates elect someone?

DR. PAUL H. BURTON (Fargo): In view of the amount of work our Secretary does for the small amount of recompense, we ought to show our appreciation by sending him.

THE SECRETARY (Dr. A. W. Skelsey): Thank you very much, but I don't think I can spend seven days away at this time.

DR. G. F. DREW (Devils Lake): I move that the President appoint a delegate.

The motion was seconded, but was not put to vote because a question was raised as to whether a quorum was present. The Secretary called the roll and the following Delegates and councilors responded:

Cass County Medical Society
 Axel Oftedal, M.D., Fargo
 B. K. Kilbourne, M.D., Fargo
 Grand Forks District Medical Society

Sixth District Medical Society

H. A. Brandes, M.D., Bismarck

C. E. Stackhouse, M.D., Bismarck

Southwestern District Medical Society

A. E. Spear, M.D., Dickinson

Northwestern District Medical Society

Cheyenne Valley Medical Society

E. B. Crosby, M.D.

Southern District Medical Society

F. W. Fergusson, M.D., Kulm

Councilors :

Second District—G. F. Drew, M. D., Devils Lake

Third District—G. M. Williamson, M.D., Grand
Forks

Fifth District—F. L. Wicks, M.D., Valley City

Sixth District—N. O. Ramstad, M.D., Bismarck

Eighth District—L. B. Greene, M.D., Edgeley

Tenth District—J. W. Bowen, M.D., Dickinson

The following alternates were elected :

Devils Lake District Medical Society

W. F. Sihler, M.D., Devils Lake

Grand Forks District Medical Society

H. E. French, M.D., Grand Forks

H. M. Waldren, Sr., M.D., Drayton

Stutsman County Medical Society

William W. Wood, M.D., Jamestown

Northwestern District Medical Society

A. J. McCannel, M.D., Minot

For the First District Councilor

(Murdock, MacGregor)

Paul H. Burton, M.D., Fargo

THE PRESIDENT: We have a quorum now.

First we will hear a few remarks from Dr. Christisen in regard to Minnesota Medicine.

DR. CHRISTISEN: Mr. President and Gentlemen of the House of Delegates: I am sure I ought to express my appreciation for being permitted to appear before you on behalf of Minnesota Medicine, which I most sincerely do.

There have been from time to time, rumors on both sides of a desire to amalgamate with the publication known as Minnesota Medicine. Please understand at the outset that I am not here trying to sell Minnesota Medicine to you. I am here for the purpose of inviting you to become associated with us in this enterprise. We believe

(and I am not ashamed to say where our belief comes from) that Minnesota Medicine is today regarded as one of the best state journals published in America, on the authority of Morris Fishbein, who, by the way, regretted very much that he could not be here in behalf of Minnesota Medicine.

The Council of the State Association of Minnesota has passed a resolution inviting the societies of North and South Dakota to enter into partnership with us and become, if you please, part and parcel of Minnesota Medicine.

I am authorized by our Council to say to you that the title of the Journal, in the event of your joining us, will be changed from Minnesota Medicine to Minnesota and Dakota Medicine.

We are able to say to you that the Committee on Editing and Publishing has been given carte blanche to enter into any negotiations that you see fit. We simply feel that we should like to have a free voice from all quarters, and if the honorable Chairman will permit me, I will suggest that if any of you have any questions that you would like to ask me as the Chairman of the Editing and Publishing Committee of Minnesota Medicine as to the conduct of that Journal. I shall be delighted at this time to answer them.

It has been suggested that it would be well for us to have a committee of your House of Delegates, with a like committee of the House of Delegates of South Dakota, to get together tomorrow sometime, perhaps, and come to some sort of agreement.

I might say for your benefit or your edification that the State Association of Minnesota subsidizes Minnesota Medicine to the extent of two dollars per year per member. What sort of arrangement you would care to make with us, whether you would like to go into a co-partnership and share with us in the profits or the losses, as the case may be, is a question. I might say, however, that we have never had a loss but one year since Minnesota Medicine came into existence.

We are simply inviting you to join with us in the publication of a bigger and better state journal.

I shall be glad to hear any questions you have to ask. In the absence of questions, I assume you are all familiar with Minnesota Medicine and its conduct.

DR. W. F. SIHLER (Devils Lake): I know very little about it, and perhaps there are others equally as poorly informed, and I think it would

be advisable to appoint a committee to report later at this session.

THE PRESIDENT: A committee of how many?

DR. SIHLER: Three would be sufficient. I make that as a motion.

(The motion was seconded.)

DR. GEORGE M. WILLIAMSON (Grand Forks): My understanding is that the Council has to do with making that kind of arrangements, and I don't think it is up to us as delegates at all. The Council may be guided very much by what the House of Delegates may think about it, but I don't feel this House can usurp the powers of the Council.

THE PRESIDENT: I am convinced that you are right. Dr. Sihler, would your motion be in order then?

DR. SIHLER: I will withdraw my motion. My idea was just to lead up to the point of educating the delegates and the Council and arrive at some way of disposing of the proposition. Whether you appoint a committee from the Council or the House of Delegates is immaterial to me.

DR. WILLIAMSON: It is a very live subject to bring before all the delegates so they may think about it and talk about it and take action at a later meeting.

DR. H. E. BRANDES (Bismarck): First of all this is a thing that is of interest to all the members of the North Dakota Medical Association. Isn't it possible to appoint a joint committee from the House and the Council to get together and report back at the next meeting of the Council, and then the Councilors can be guided by that report?

THE PRESIDENT: One of the members of the South Dakota Association approached me and suggested that after we had thrashed this thing out ourselves we appoint a committee to meet with a committee of theirs, or we would have a joint meeting of our Councilors and decide the matter.

DR. WILLIAMSON: This is a big subject. I don't think we should go off half-cocked. It is new to me. I don't know anything about it. We have been connected with the Journal-Lancet for a long time. I don't know whether there is dissatisfaction with the Journal-Lancet. If there is let us hear about it. To take definite action on this thing tonight would be hardly in order. We are not giving the fellows who are not here, who perhaps are very much interested, a chance to express their opinion. Perhaps there may be a representative here from THE JOURNAL-LANCET. Let the other fellow have a chance to say something.

DR. BRANDES: I move that two delegates and two Councilors be appointed as a committee to investigate this and report back.

DR. SIHLER: Possibly Dr. Williamson misunderstood my idea. I didn't suggest doing anything more than appointing a committee to investigate.

DR. L. B. GREENE (Edgeley): I should like to move as a substitute motion that this be referred to the Committee on Medical Education. We have three of those members here now. They can feel out the delegates and the other members and see what the general feeling is.

The motion was seconded and carried.

THE PRESIDENT: I am informed that Dr. J. A. Myers is here to represent THE JOURNAL-LANCET. Perhaps you would like to have him make a few remarks.

DR. CHRISTISEN: Mr. President, I certainly appreciate your kindness. May I be permitted to say that we would like, if it is possible, to have this Committee on Medical Education accept an invitation from us to take luncheon with us tomorrow at whatever hour is convenient for them, and we will go over the matter with them and answer any questions that they may see fit to ask. I thank you.

THE PRESIDENT: Dr. Myers, we will hear from you.

DR. J. A. MYERS: Mr. Chairman and the House of Delegates and the Council: I do appreciate very much the opportunity to say something about THE JOURNAL-LANCET. In the first place, we are trying to run in every other issue a group of articles in series. I presume you have noticed that Dr. E. T. Bell, pathologist, and Dr. H. D. Lees are running a series of articles. Another series on x-ray, by Dr. L. G. Rigler, and just as soon as this series of articles is completed he will have a clinic every month, just as Dr. Bell has at the present time. The attempt is being made to furnish ammunition to combat the unethical cults.

I understand there has been some advertising in THE JOURNAL-LANCET that has been far from what it should have been, some very questionable advertising so far as the medical profession is concerned. I would just like to say that the present editorial board has made a very definite arrangement to eliminate that kind of advertising.

Someone says, "How does it happen that the last issue continues to carry some of these advertisements?" THE LANCET has contracts with its advertisers, and when this Board came into the

field it was absolutely impossible to terminate them and keep out of legal entanglements, but just as fast as those contracts expire, they are being terminated and replaced with ethical advertising.

I might say that since the first of January we have turned down \$2000 worth of advertising.

The publishers have given us in writing the statement that there will be no advertisement whatsoever from now on accepted for THE JOURNAL-LANCET until it is approved by every single member of the Board of Editors. This Board of Editors, as you know, consists of four men from North Dakota, four men from South Dakota, and a number of other men from Minneapolis. So the advertising problem is one that has been solved. Until these contracts expire, however, which should be within the next six to nine months, it is absolutely necessary that those few be run, otherwise there will be legal difficulties almost immediately.

We have on the Board of Editors the man who has done so much for medical legislation in the City of Minneapolis, the man who organized the druggists, the dentists, and the medical profession. He has been able not once, but several times, to defeat candidates for office who have refused to express their willingness to support the medical profession. That man is on the Board, and it is his job to watch just that sort of thing, not only at Minneapolis, but throughout the entire Northwest.

So far as representation on the Board of Editors is concerned, if more representation is desired, the present Board will be very glad indeed to add just as many representatives on that Board as your state desires.

In closing, I want to say that we are ready to make THE JOURNAL-LANCET just what you would like to have it.

THE PRESIDENT: This is a matter that I have given considerable thought for some time, and it seems to me that if some arrangement could be made whereby Minnesota Medicine and THE JOURNAL-LANCET could unite into one journal, it would be a better opportunity to have a first-class, all-around journal than with two of them. I would suggest that the Committee take that into consideration.

I understand Mr. Rosell has a few words to say.

MR. R. R. ROSELL (National Food Bureau, Chicago): I am here to ask the cooperation of the North Dakota State Medical Society in a

program that the Millers' Federation of America is putting on in this country in doing away with various types of quacks. In the last decade we have had a considerable amount of food faddism which has hit the milling industry very hard. We have our selfish interests back of it, we are trying to protect our commodity; nevertheless, we are also trying to protect the farmers in a general way.

The way we are carrying out our program in a legislative way is to go before the different states where the naturopaths and chiropractors, who are our worst enemies, are active, and to defeat them as we recently did in Illinois when Dr. Clark, who tried to introduce a bill there called Sanitology, was fighting us. His favorite slogan is "Be Your Own Doctor," and another is "The whiter the bread, the sooner you're dead." We defeated his bill.

We have the other type of itinerant quack, such as Bragg, Richardson, and others, who go around into the different communities selling their wares, health corsets, books, etc., and all the time condemning white flour.

We are not asking the North Dakota State Society to endorse white flour, but we are asking them to pass a resolution to vindicate our commodity.

Macfadden recently made an attack on us. We have had him three different times. We have got him on the carpet again. An article appeared in his journal in New York City, the New York Graphic, in which he claimed that white bread was the cause of criminals. We don't know how we are going to come out on that, but the other two times we have been able to defeat him.

We have been able to cut down a considerable amount of the health columns that appear in some of the daily newspapers by McCoy, that famous chiropractor of Los Angeles, McCann, and others. McCoy at one time was in first place in syndicated articles in the United States, and he is now down to ninth.

We bring pressure to bear on the newspapers that do not cooperate with us. We tell them that we can't advertise in a newspaper that is using that type of health column. Usually they are willing to discontinue that type of health column.

Recently in Oregon, where they had a basic science bill, we spent three weeks trying to put the basic science bill through. We were unsuccessful, however. We were beaten by a close vote, but there had been no preliminary work done. We are willing to do that in any state

where the naturopath and the chiropractor is active. We feel that this work in the long run will give us some increase in business and also we are assisting the public in a general way.

The resolution that we are asking for has been passed in twenty-two other states of the Union. It first appeared in Kansas where we put on our program, then Minnesota, and from there on we have continued our program in other states, New York, Pennsylvania, Illinois, Iowa, California, Washington, and so on. I have given a copy of the resolution to one of your members here and have asked him kindly to present it.

DR. B. K. KILBOURNE (Fargo): I have a copy of the resolution, and I will read it.

"WHEREAS, Much misinformation is promulgated today on the question of diets, etc., causing the introduction in the American diet of food fads.

"Very few of these fad foods can take the place of the older staple foods, good meat, dairy products, green vegetables, fruits and the better grades of bread prepared from white flour.

"Any balanced diet should contain animal protein, fruits, vegetables, especially the leafy vegetables, which will insure adequate vitamin and mineral salt content, digestible fat such as butter fat, and sufficient of the digestible carbohydrates to afford readily available energy.

"Carbohydrates, including sugars and starches, but especially starches, furnish the American public their main fuel for energy, the quantity varying with the amount of physical activities which the individual expends. Much of the starch should be supplied by the most available and easily digestible foodstuffs, of which white flour is an excellent example.

"The allegation that white bread, meat, or any other staple food, when employed in mixed diet is responsible for certain grave illnesses, is not supported by scientific facts.

"THEREFORE BE IT RESOLVED, That:

"We desire in the public interest to place on record that in our opinion:

"1. The exaggerated claims for various fad foods are entirely unwarranted by scientific evidence or practical experience; and the advertising and other propaganda furthering their substitution for the older articles of diet should be condemned.

"2. The danger of nutritional deficiencies has been grossly exaggerated. No one food is a perfect food; but a diet consisting of dairy products (especially milk), leafy vegetables, fruits, meats and easily digested starches for heat and energy, furnishes an excess of all food factors necessary

for proper growth and nutrition and resistance to disease.

"3. Any variation from normal diet should only be prescribed by a properly trained physician after a careful study of the dietary requirements of the individual seeking advice."

I move the adoption of the resolution.

The motion was seconded.

DR. L. B. GREENE (Edgeley): As a substitute I move that it be referred to the Committee on Public Health. Half of us really haven't had a chance to consider this, and we don't want to take a snap shot at it.

DR. KILBOURNE: This has been considered by the Committee on Public Health. Dr. Whittemore and myself have had interviews with the gentleman during the past year, and I think Dr. Whittemore approves of the resolution; don't you?

DR. A. A. WHITTEMORE (Bismarck): Yes.

DR. GREENE: I withdraw my motion.

The motion to adopt the resolution was put to vote and carried.

It was voted, upon motion regularly made and seconded, that the minutes of the last meeting as published in THE JOURNAL-LANCET, August 1, 1930, be adopted as the official record.

STATE SECRETARY'S REPORT

Our paid-up membership to May 29th, inclusive, is three hundred and seventy-five (375), an increase of eighteen over the same period last year. There will probably be later remittances from those now delinquent. In view of economic conditions, this seems a fairly good showing.

Details about the various districts will be furnished through the Councilors' reports.

I wish to thank the local secretaries for their coöperation and their courteous correspondence.

The American Medical Association insists that in order to be an acceptable delegate from any State society, such delegate must have been a member and also a Fellow of that National Society for at least two years next preceding the session of the National House of Delegates at which he is to serve. Blanks for such Fellowship may be obtained through the local secretaries. The fee is \$1.00, payable once only. In addition, there is the regular annual payment of \$7.00 for the Journal A. M. A.

Our official publication, THE JOURNAL-LANCET of Minneapolis, greatly desires items of interest from our members; in fact, at our request, the magazine carries a standing invitation to that effect. Please note that the printers' forms close on the 10th and the 25th of each month, hence news received about those dates may be carried over or perhaps omitted from the next issue, on account of being too old data.

It was not possible for me to attend the annual meeting of the National States' Secretaries, held in Chicago, November, 1930, but some reports of such meetings

have been printed in the Journal A. M. A. and also in the monthly Bulletin A. M. A.

The Northwest Regional Conferences and also the Minnesota Local Secretaries' Association met in St. Paul on February 7th and 8th, 1931. Our President, Dr. Andrew Carr, Sr., and I attended the same. From the talks and the papers there presented, one gained the impression that the medical field in Minnesota is strongly organized. Of these meetings I made a report which I had typed and sent to our local secretaries, in the belief that some of the data might be suggestive and helpful. The so-called Iowa Plan,—an arrangement for contracts with the county commissioners or supervisors of the poor, looking to the guaranteed payments to the physicians for the care of all indigents, attracted much attention. In mailing out my report I offered the Secretaries copies of the Iowa pamphlet, and I have yet a few copies in hand. Further, at those St. Paul conferences, the Minnesota Women's Auxiliary to the A. M. A. was in evidence, and through its representative expressed its desire to be helpful throughout each *whole* year. Although some of us, perhaps, have had a rather hazy idea that that Auxiliary was merely something which should and did function at our annual sessions, to help entertain the visiting wives, we must now take cognizance that the new Auxiliary is based on different lines and procedure; that it is organized and already actively working in some of the States. Part of the plan is outlined in my report; monthly data generally given in the last page or two of the A. M. A. Bulletin.

At the request of the Editorial Board Chairman of THE JOURNAL-LANCET, a called meeting was held in Minneapolis in April, 1931, for the purpose of considering the policy of that magazine; its attitude in regard to the matter of ethical advertising, etc.

In this connection, and as a matter of official record here, attention is called to the policy adopted by the Board of Editors of the above-named publication, which Board was developed shortly before his death by Dr. W. A. Jones, for many years its Chief Editor,—in his desire to continue the existence of THE JOURNAL-LANCET. In addition to the issuance of the 60th year Anniversary Number, in February, 1931, it is planned to issue, as of date June 1, 1931, a special number to commemorate the 50th year of organized medicine in the Dakotas, and papers have been requested pertaining to the history of medicine and medical institutions in these two States. Further, the business management have promised that they will cooperate with our physicians in the matter of advertising admitted to the pages of their magazine; and that with the termination of current contracts it will be their endeavor to omit a certain type of advertising which may to the medical profession be deemed non-ethical. They expect to have a booth at the Aberdeen joint meeting, and would doubtless appreciate having our doctors there tell them what they specifically consider to be objectionable advertising.

Owing to its convenient location for the South Dakotans, in connection with preparation for our joint program, a couple of committee meetings were held jointly in Jamestown, N. D.

Richland County, with its ten members, this spring held a very profitable meeting at Breckinridge, Minn., with an attendance of about forty doctors. A banquet preceded the scientific part of the program. Cass County, on invitation, had some representation and enjoyed themselves. Thus Richland shows that a medical

society, even though numerically small, may yet be many degrees away from cold death. It is of course quite probable that other societies have done equally well; this particular reference is made because that society is nearby and thus we came into close contact.

Letters have been received from Memphis, Tenn., and New Orleans, La., putting forth their claims respectively, as being desirous of having the American Medical Association hold its annual meeting there in 1932. North Dakota is urged, at its Aberdeen session, to instruct its national delegate to express its preference in the National House of Delegates at the June, 1931, meeting in Philadelphia.

We have received an official and courteous request from Minnesota Medicine suggesting that such publication might be profitably utilized in the interests of the medical profession in the Dakotas, and stating that some correspondence from this territory indicated a desire for such an arrangement; also, that probably the present title could be changed to read Minnesota AND Dakota Medicine. Acknowledgment was made of that friendly letter, and the communication transmitted to our President and the President-Elect.

Some of the local societies have made complaints that physicians belonging to the area of such societies have taken membership in an adjoining society without the procedure usual and obligatory in such cases. In reply I suggested that if the matter could not be arranged satisfactorily between them, that the subject be brought up at our Aberdeen meeting.

The past year, having been one involving legislation, State and National, there has perhaps been more than the usual correspondence. Our national organization has vigorously and persistently opposed the so-called Sheppard-Towner Maternity and Infancy Act, as well as later bills under the title of the Jones and the Cooper Acts, and have actively urged the various State societies to combat such proposed legislation. It would appear through some of the literature passed along that there has been quite a conflict between the National Children's Bureau and the U. S. Public Health Service, as to the control of such funds, if granted. According to the Journal A. M. A., May 2, 1931, our National Bureau of Legal Medicine and Legislation advise that the substitute bill, without having come to a vote in the Senate, died with the expiration of Congress, March 4, 1931. The peculiar thing about this particular theme is the widely varying attitude taken by those linked up with the medical profession, namely: The A. M. A. is strongly averse to that type of so-called National Governmental paternalism; then we have our State and Local public health agencies, plus the varied and variegated welfare workers, who are intensely in favor of such governmental aids; lastly, many of our own physicians, who are not at all interested in the conflict and do not care to mix into the affair.

The Bureau of Legislation A. M. A. have requested that all of our members cooperate fully in the enforcement of the National Narcotic Bill. I believe that we may all take it for granted that our practitioners are strictly ethical and careful in this matter, but that we should not go out of our way to attend to duties which belong to the Governmental-paid service, looking to the detection and apprehension of violators.

The Board of Trustees of the A. M. A. have appointed a Committee on Legislative Affairs, to act in conjunction with State societies, and to reinforce in any way possible action suggested by such State societies. Said

Trustees now request correspondence with the regional officers named in their communication. Referred to our Legislative Committee.

Attention may here be called to the atrocious cartoons and abusive handbills distributed in Bismarck and the adjoining country by the energetic Irregulars and Non-descripts during the legislative sessions the past January and February, concerning which we shall doubtless hear through our Committee on Legislation in their report at the Aberdeen meeting. Promise has been made that some of those handbills, etc., will be on exhibition at that annual meeting, that you may gain some idea of the opposition parties and their tactics.

As the A. M. A. does not meet until subsequent to our annual session, the report of our delegate, elected in May, 1930, will have to be given a year hence.

I desire to mention a book published by our Association: Dr. Grassick's History of Medicine in North Dakota. Price \$3.50. Dr. George M. Williamson of Grand Forks, is custodian of those volumes. This History was completed only a few years ago and gives valuable and interesting data of past and present conditions; includes material and photographs that later on might be very difficult to secure. A copy may be seen at the N. D. State Secretary's desk, Aberdeen.

Some years ago a part of our Society's records was destroyed by fire. That which has now been passed on to me consists mainly of the card index system, the annual register book, several copies of Dr. Grassick's History, and only those portions of THE JOURNAL-LANCET containing the Minutes of our State Association for several years past; also a few assorted letter files. Beginning with the current year, I have been putting aside the bi-monthly copies of THE JOURNAL-LANCET, in order to make a start towards the preservation of magazines showing what we have been doing throughout each year. Perhaps, later on, some of our members, who have saved those transactions for many years past, may be willing to bequeath them to us, when we are properly equipped to take care of such material.

Our Association probably owned a corporate seal, yet Dr. Rowe, who was your Secretary for very many years, tells me that he has never seen such an instrument. If any member can locate the seal, correspondence invited.

I take issue with the resolution passed at the last annual meeting designating the State Secretary's annual salary as \$200.00. (Page 358, J.-Lancet, Aug. 1, 1930.) To any one wishing the position on that basis I am quite willing to relinquish the tripod.

ALBERT W. SKELSEY, M. D., Secretary.

DR. WILLIAMSON: I have been attending these meetings for some time, and with all due respect I want to say this is the best report of a secretary that I have ever heard. I know Dr. Skelsey has done a lot of work this year, and I hope that he will be retained.

DR. PAUL H. BURTON (Fargo): The secretaries previously have had a salary of \$200, plus 50 cents a member. For some reason Dr. Skelsey was cut out of that 50 cents. He has done more work and brought in a better report on less money than any secretary we have had in a great many years, and I hope this body will readjust this matter and that Dr. Skelsey not only will be paid

what he should be paid, but he should also be recompensed for the work he has done in the past year. If we have a first-class secretary, let's keep him.

The Secretary's report was accepted, upon motion of Dr. Sihler, seconded and carried.

TREASURER'S ANNUAL REPORT, NORTH DAKOTA MEDICAL ASSOCIATION

May 22, 1930 to May 30, 1931, Inclusive	
Balance May 22, 1930, Chk. Acct.....	\$1,900.63
Balance May 22, 1930, Savings Acct.....	2,250.80
Latter includes one \$1,000 Liberty Bond	
<i>Total Assets May 22, 1930.....</i>	<i>\$4,151.43</i>
Dues received from Secretary.....	\$2,087.00
Balance Grassick Book Fund from	
Dr. Williamson	11.43
Interest received on Liberty Bonds.....	42.50
Interest received on Savings Acct.....	50.08
<i>Total Receipts</i>	<i>\$2,191.01</i>
<i>Total Assets and Receipts.....</i>	<i>\$6,342.44</i>
<i>Disbursements:</i>	
Checks 220 to 236, Inclusive.....	\$2,399.58
Exchange on checks.....	6.10
<i>Total Disbursements</i>	<i>\$2,405.68</i>
<i>Balance on Hand, May 30, 1931.....</i>	<i>\$3,936.76</i>
Distribution of funds at present:	
Savings Account as Per Book.....	\$2,343.38
Checking Account as Per Bank Statement	1,593.38
<i>Total</i>	<i>\$3,936.76</i>

Statement shows net loss of assets, \$214.67.

Respectfully submitted,

(Signed) Wm. W. Wood, Treasurer.

The Treasurer's report was received and referred to the Council, upon motion of Dr. Williamson, regularly seconded and carried.

REPORTS OF COUNCILORS

FIRST DISTRICT

Since the last meeting of the State Medical Society, the Cass County Medical Society has held one special and seven regular meetings. During the year two members of the Society died, Dr. C. N. Callander, and Dr. Arne Oftedal. Two new members have been admitted to membership during the year, Dr. A. T. Floew and Dr. C. B. Larson. There are 62 paid up members of the Society for year ending May, 1931.

At the special and two of the regular meetings scientific programs were furnished by non-resident speakers; all other programs were furnished by members of the local Society. A keen interest has been shown at all meetings, and the attendance has been good, an average of 33 at each meeting.

M. MACGREGOR, M. D., Councillor.

SECOND DISTRICT

The Devils Lake District Medical Society had three good meetings during the year 1930. At each meeting outside speakers gave the principal talk, which seems to

be a good way to get an attendance and interest the members.

In January we had Dr. J. F. Hanna of Fargo; in April Dr. H. M. Waldren of Drayton; and in October Dr. W. E. G. Lancaster of Fargo. Outside speakers seemed to take much better than local talent, and two or three good lively meetings in a year I think are much better than more which are slow and uninteresting.

Our membership has fallen off three, due to non-payment of dues and two transfers. We have taken in one new member. It seems the membership will remain about the same and the Society will continue about as usual, as the number of doctors in the district remains about the same.

G. F. DREW, M. D., Councillor.

THIRD DISTRICT

The counties of Grand Forks, Nelson, Walsh, Pembina and Cavalier, comprise the Grand Forks District Medical Society. There are 77 doctors in this group, and some of these hold membership in adjoining counties. When this District was organized convenience of travel by railroad was considered; good automobile roads have changed this, so that travel by auto makes it more convenient to attend in adjoining counties.

This Society has had some very excellent men on their programs this year, yet there has been a falling off in membership. Vigorous and energetic means on the part of the officers of the local society should result in having as a member every man practicing in this district.

In previous years I have had advocated quarterly meetings, and I am convinced that such meetings, arranged for a day and evening's session would create more interest.

GEORGE M. WILLIAMSON, M. D. Councillor.

FOURTH DISTRICT

Number of members in good standing, 62.

Number of members dropped for non-payment of dues, 5.

Number of members who have left the district, 5.

Number of new members, 9.

Number of deaths, none.

Number of meetings, 12.

Average attendance, 23.4.

The custom established a few years ago of having our district society meetings begin with a dinner provided alternately by St. Joseph and Trinity Hospitals, has proven to be increasingly popular. It may safely be said that the character of our programs has increased in scientific value and interest. Northwestern District Medical Society has enjoyed a very successful year and looks forward to a similar year for 1931-1932.

E. M. RANSOM, M. D., Councillor.

FIFTH DISTRICT

The Traill-Steele County has had three meetings during the year with an average attendance of 70 per cent of the membership. The main speakers at these meetings as follows:

Dr. O. E. Locken of Crookston.

Dr. H. E. French, Dean of the Medical Department of the University.

Dr. V. S. Quale, Grand Forks.

Membership has been increased by one; a total of 11 now paid up and in good standing.

The regular Spring meeting of the Society was held at Northwood at the invitation of Dr. M. T. Savre, Chief of Staff, and the Directors of the Northwood Hospital; all present being royally entertained.

The professional and fraternal spirit of the Society is fine.

Officers:

President, Dr. R. C. Little, Mayville.

Sec.-Treas., Dr. Syver Vinje, Hillsboro.

Delegate, Dr. Syver Vinje, Hillsboro.

Alt. Del., Dr. T. J. Glasscock.

THE SHEYENNE VALLEY SOCIETY—Part of the Fifth District.

We have a membership in good standing of eighteen.

Dr. C. E. Spicer, a former official of the Society, and past President of the State Society, removed to Long Beach, California, earlier in the year.

The October meeting was given to discussion of important local matters, and Dr. Crosby gave a full report on the Typhoid cases brought in from the country and placed in the Isolation Hospital.

At a subsequent meeting Dr. Pray reported on the clinical value of Sylargen given in conjunction with ammonium nitrate in cardiac failure with extreme edema.

Pending legislation sponsored by the medical profession, was given every possible support by the Society.

During the past summer physicians of Valley City entered into a contract to provide week end vacations; two men to remain on duty each week from Saturday noon until Monday morning.

The annual banquet was held March 11th, at which time the following officers were elected:

President, Dr. E. A. Pray.

Secy.-Treasurer, Dr. Will H. Moore.

Delegate, Dr. A. W. Macdonald.

F. L. WICKS, M. D., Councillor.

SIXTH DISTRICT

During the past year the Society has held four meetings, at which good, interesting programs were given. The average attendance at the meetings was 36 members and six visitors.

A year ago our membership was 55.

New members added during the year, 2.

Total, 57.

Member moved from the district, 1.

Total members in good standing, 56.

The application of a new member will be considered at the next meeting.

Our programs at each session have been strengthened by having a speaker from outside the Society. The meetings have been preceded by a dinner at one of the hotels which permits informal discussions and promotes better understanding among the members.

The following out-of-town physicians have presented papers before our Society during the year:

Professor O. H. Wangenstein, Minneapolis.

Dr. L. M. Randall, Rochester.

Dr. J. A. Evart, Glendive, Mont.

Dr. L. G. Rigler, Minneapolis.

An encouraging feature has been the co-operation of the management of Radio Station KFYZ located in Bismarck which has refused to include in its programs unethical and fraudulent medical advertising. Mr. P. J. Meyer, President of the Company, has re-

peatedly submitted to us for investigation inquiries from this type of broadcasters.

I recommend that societies which are located near radio broadcasting stations take an active interest in the radio programs, in order to prevent broadcasting of harmful and misleading medical information.

N. O. RAMSTAD, M. D., Councillor.

SEVENTH DISTRICT

I have the pleasure of reporting a full membership in our county, namely; 100 per cent of all registered physicians, excepting those who are working at the State Hospital who are not registered.

We have had a reasonably successful year. Have had four regular meetings at which times outside speakers were present and gave us very splendid programs. These meetings were well attended by regular members and visitors, and were enjoyed by all.

Nothing of any consequence has occurred during the year. Our Society is in reasonably good financial condition, and we are working in perfect amity.

There is a little matter which I wish to bring before the Council at this time, probably not the proper place, but in as much as a large percentage of our State Membership is made up of Railroad Surgeons, and inasmuch as they are unable to secure interstate transportation for their families due to some conflict in Federal Laws, I would make leave to suggest that our Delegate to the A. M. A. Convention be instructed to take this matter up in the House of Delegates so that some regulation could be devised, making this possible.

Having nothing further to offer at this time, I beg leave to remain,

Sincerely yours,

P. G. ARZT, M. D., Councillor.

EIGHTH DISTRICT

Members whose dues are paid, 12. Doctors in District who are eligible, 6. Two of these non-members will no doubt become members.

Dr. L. F. Lohrbauer of Oakes, has removed to California.

Two new men have located in Oakes and will join the Society. One of them at present is a member of the South Dakota Society and will transfer to our Society.

We have had one fairly good meeting during the year, May 5, 1931, which was quite well attended, and we have a program for two other meetings.

Respectfully submitted,

LEE B. GREENE, M. D., Councillor.

REPORT OF THE NINTH DISTRICT

Report of the activities of the Tri-County Medical Society for the year beginning June 1, 1930, and ending May 31st, 1931:

Six meetings were held in the different parts of the district, including one meeting at San Haven. As a whole the attendance has been satisfactory; a few of the members, however (usually the same ones), being absent as a rule. I believe the main topic of discussion at these meetings has been medical legislation in general and that of our own State. The matter of fees, due to the economical changes in general, has held a prominent place in the minds of the members. Most of us feel that we must make some kind of an adjustment in this matter, not only for help to the patients involved, but for the improvement of our volume of business. The Society feels grateful to

the legislators in both houses who have represented scientific medicine in such an exceptional, sane, and sensible way. The Society is also grateful to our own members and others who have worked in the last legislature in the interest of scientific medicine. The discussion of articles appearing in the A. M. A. Journal and in THE JOURNAL-LANCET and of interesting cases presented by the different members, constituted another item in our meetings. Of course the social side has not been neglected. At the close of the meeting, the town that invited the meeting also served the dinner. We are glad to report that we, as the remaining members, have been getting along very smoothly; very little friction, if any, having been in evidence.

At the present time we have 15 paid up members on the Roster, two of which moved to other districts but still keep their dues paid up with our Society. One new member was added. Two members have not yet paid their 1931 dues but we are still in hopes that at least one of them will yet do that. Outside of that, we are all here, none of us having been called for the last time on this earth.

Respectfully,

J. J. SEIBEL, M. D., Councillor.

TENTH DISTRICT

Mr. President, Fellow Councillors and Members of the House of Delegates:

During the past year the Stark County Medical Society, which was organized in 1909, has, with the consent of the State Medical Society, been discontinued, and has united with the Southwestern District Society under the name of the Southwestern District Medical Society. The amalgamation has produced a bigger and stronger society and has proved of great benefit to the members of both.

We have held six meetings during the year. We try to make them interesting and instructive from a professional standpoint as well as pleasant and entertaining from a social standpoint. On account of the large area covered by the Society, attendance at the meetings is rather a serious proposition. Our district is 110 miles east and west, and 130 miles north and south. In order to attend the meetings it is sometimes necessary for a doctor to drive over a hundred miles. To overcome this we hold our meetings in different cities each time, so that every member can attend as many meetings as possible during a year.

There is a cordial feeling of friendship between the members of the Society, which helps to make the meetings very pleasant and enjoyable. We have had no sign of friction. Perfect harmony and good fellowship have prevailed at all of our meetings, and we have tried to do everything possible to promote the best interests of our members and of the profession. Our membership consists of twenty-eight tried and true men in good standing in the profession and all residing and practicing medicine in our territory.

We have lost one man, Dr. J. E. Schneider of Bowman, by death, and Drs. S. Moske of New England, and J. W. Moreland of Dunn Center, by removal. There are five doctors in our district who do not belong to the Society. Dr. J. G. Johns of Hettinger, who is sick and not practicing; Dr. J. A. Malerich of Richardson was refused membership; Dr. V. G. Morris of Beach, Drs. Nelson and Weyrens do not belong, and have been so reported to the State Secretary in our annual report. We have been notified by our State

Secretary that Drs. Nelson and Weyrens have been reported as holding membership in the Sixth District Society.

In the annual report of our Secretary he is definitely instructed to report the name of each physician practicing in a district who does not belong to a society. As long as these are the instructions, Drs. Nelson and Weyrens will be so reported. This matter has been discussed by the members of the Southwestern District and they are unanimous in the opinion that Drs. Nelson and Weyrens should belong to the District in which they live, Hebron being within the boundaries of our Society. This again brings up the question of the right of a neighboring Society accepting members, when it would be just as convenient and better for the welfare of all if they belonged to the district in which they lived and practiced. It is easy to see that if the physicians who live on the border of adjoining societies would join the one to which they are approximate, rather than the one in which they live, how easy it is to work a hardship on those who are striving to keep up a good society. Hebron has been in our territory since 1909 and belongs to the Southwestern District Society.

We believe the place to have this settled is at the annual meeting at the House of Delegates of the State Medical Society, and we wish to have the matter taken up at this meeting.

J. W. BOWEN, M. D., Councillor.

DR. WILLIAMSON: This subject that has been brought up by Dr. Bowen about men holding membership in another district is a condition we have existing in Grand Forks. I believe it is a matter we ought to discuss. The Constitution will tell us where they must be members.

THE SECRETARY: The Constitution says that a physician living near a county line may hold a membership in that county society most convenient to him, providing no objection is made by the society in whose jurisdiction he resides.

The point that seemed to rankle in that secretary's and president's breast in the case I mentioned was the fact that they had not asked permission to join the other society.

DR. KILBOURNE: We accepted the statement of the two gentlemen that the county society in the county in which they resided was not functioning very well, and therefore took them into ours, and the next year we got a complaint from their old society, saying that their society was functioning and they had had a meeting. We simply have to turn those two members back to them because they are outside of our jurisdiction.

DR. WILLIAMSON: If it is more convenient for a fellow to go to one place than another, why not let him, if he be a member of the state society. It is a difficult matter nowadays to force fellows to do something they don't want to do. Of course, it would be courtesy on their part to ask permission to join the other society, and I have no doubt they would be given permission.

DR. WICKS: I was of the opinion that there was a committee working on that matter last year. It seems to me it can work both ways. It might be a favor to a very small society who has members who might seek membership in a large society, for the large society to exclude them, because then they perhaps would go to work in their small society and form a group that would meet.

As regards Traill-Steele, they have a membership of probably eleven. They can't get them all together, but they can get 60 or 70 per cent. It seems to me it would be fatal to a small group to take its members away.

If I can read between the lines of any of the correspondence that I have had with Dr. Vinje, they think a great deal of their own society, but if you take two or three away from them they will not have any group left at all, and it will be pretty nearly fatal to them.

DR. BOWEN: We have had quite a struggle organizing. It is a large territory with a scattered membership and we have trouble getting them together. At a joint meeting of Stark County and the Southwestern District this was discussed more than any other one thing. They claim they have a small society. We agreed to consolidate the two so we would have a representative membership and could put on a program, and the consequences were that they wanted all the men that lived in that district and could avail themselves of the meetings that were held to stick to the crowd and make a society of it.

DR. W. C. FAWCETT (Starkweather): This question was pretty thoroughly thrashed out last year and a committee appointed, of which I was chairman, to go into the matter. Dr. Sorenson of Minot was secretary of that committee. Dr. Spear was on the committee, too. We had a session at the meeting last year, and recommended that the report to the last meeting of the House of Delegates at Bismarck last year should be something along this line: that each man belong to the district where he lived, as much as possible, but where he was on the border and it was more convenient for him to belong to the other society, even though the other members of the society didn't think he should, if he thought best, well and good. We also said that we felt the time was coming in the very near future when the societies would simmer down to just those along the two main lines, and probably it would be better for all concerned if the societies would do that. We figured at that time that the Southern Society probably was coming in with Jamestown,

and as Dr. Bowen has just said, that the South-western would come in with Stark. It probably will be that the Tri-State will eventually divide up, and part will go to Cass and part to Grand Forks.

I thought the recommendations our Committee made at the last session sort of closed the question.

DR. WILLIAMSON: I move that Dr. Fawcett bring in, in a condensed form, a resolution following the Constitution as nearly as he can, so that we can adopt it at this meeting, and then the Secretary should write the secretaries of the component societies to follow the resolution, whatever we adopt, as closely as possible.

The motion was seconded and carried.

DR. H. A. BRANDES (Bismarck): In the report of Dr. Ramstad there is an item that I think deserves more than passing notice. I have reference to the stand that the management of the KFYZ broadcasting station has taken toward questionable advertising. All of you know the influence that radio has on our people, and I don't need to go into that, but I believe it would be a fine thing if our State Society would instruct the Secretary to send a letter to the management of KFYZ and any other stations in the state that are taking the same stand, recognizing and commending them for the position KFYZ has taken.

DR. KILBOURNE: I might ask Dr. Brandes if he would include a recommendation to WDAY to discontinue the type of broadcasting they are doing. I wonder if a recommendation from this body would have some influence.

DR. WILLIAMSON: I am in favor of this resolution proposed by Dr. Brandes being worded and brought in tomorrow.

DR. BRANDES: That is all right.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

DR. HENRY M. WALDREN, SR. (Drayton)
and

DR. V. J. LAROSE (Bismarck)

To the President and members of the Council and the House of Delegates of the North Dakota Medical Association:

Your committee on public health and legislation met in Fargo, in August, and considered needed Legislation; they agreed that, in the interest of Public Welfare, a measure should be introduced in the 1931 Legislature providing for a standard of education for all who desired to engage in the healing arts in the State of North Dakota. It was unanimously agreed that, instead of a so-called Basic Science Law, we should introduce a Preliminary Educational Requirements Bill, in substance requiring, for all practicing the so-called healing arts, the same pre-professional education that the

University of North Dakota requires for entrance into the medical faculty. At this meeting the requirements to be embodied in the Bill were developed, and the personnel of the Board of Examiners for same. An attorney was employed and authorized to put such a Bill into form for introducing into the legislature, and to report it to the Committee for approval at a meeting to be called later.

The enforcing of the Medical Enforcement Act came up for consideration. The Committee were unanimously agreed that, under the present system requiring the various States Attorneys in the different counties, to enforce the Act, it was a farce and agreed it would never be enforced as long as we were without means, ourselves, to investigate and prosecute infractions of the law. We agreed that, while this duty properly belonged to the State, it was obvious that we might just as well be without a law, as far as the enforcement of this Act was concerned, so long as proper pressure could not be brought to bear on the State's Attorneys and funds were not available to secure the proper evidence of violations, and where necessary, special counsel to assist in the prosecutions. Judge Harry Borden of Grand Forks, was authorized to draw up the necessary legislation.

Your Committee again met in Fargo, November 23rd, for the purpose of examining the Bills prepared, and to discuss means for combating the Bills that would be introduced by the so-called Naturopaths. The Bills were discussed, modified, and finally approved by the Committee.

The Secretary of the Committee agreed to spend such time as was necessary at Bismarck to combat pernicious legislation and to assist in the enactment of the bills proposed.

January the fifth, we established an office at Bismarck and proceeded to lay the foundation of our work before the Legislature. Immediately, conferences were requested by representatives of the different factions of the so-called Naturopaths. Representatives appeared (local) purporting to represent the State Naturopathic organization offering the proposition that, if no opposition was offered to the passage of the Bill authorizing a Naturopathic Licensing Board, they would not oppose our Preliminary Educational Bill. The Bill submitted by the Naturopaths in substance gave them the right to practice medicine excepting obstetrics, surgery, and certain contagious diseases; specified that they be given the right to sign death and marriage certificates; and gave them equal rights as regards compensation cases. In return for acquiescence, they would issue only 26 licenses, and at the most 35; then our Preliminary Educational Bill becoming a law would for all time block further additions to the cult in this state.

While the conferences were still going on, influential members of the Legislature informed your Committee that they favored licensing the Naturopaths, but that there was another organization in the State by the same name and apparently not coöperating with those with whom we were in contact. These parties were requested to come to Bismarck to confer with us in hopes that we might get together with them on a Bill that would meet with the approval of our Society. This outfit was made of massagers, optometrists, etc., etc. We mailed a copy of the Bill they proposed to each member of our Association. This was, in effect, a license to practice medicine; giving them equal rights in the matter of vital statistics, Compensation Boards,

institutions, etc., etc. This Bill was introduced as House Bill No. 76 and defeated in the House 66 to 44, three absent and not voting. The interest behind this Bill operated an active and numerous lobby, entertained and spent lavishly, besides employing paid lobbyists.

The same interests lobbied for the Bill opening any and all tax exempt hospitals to all practitioners in the State. This Bill was known as Senate Bill No. 43. In effect it would destroy the staff organization of our hospitals, disrupt the organization, and increase hospital costs. This measure was defeated in the Senate.

Two Anti-vivisectionists Bills were introduced; one in the House and the other in the Senate. Both were defeated.

Our Annual Registration Bill was introduced in the House as House Bill No. 67 and was passed with little opposition. Minor amendments were made in the Senate but the Bill was passed and should be an effective means to control malpractice as well as illegal practice of medicine and surgery.

Our Preliminary Educational Bill was introduced into the Senate as Bill No. 29. It passed the Senate with only light opposition; the final vote being 40 to 6, three absent and not voting. In the House, however, it met a different fate. It was amended in the Committee and, as amended, was very unsatisfactory. It was strenuously opposed by Naturopaths, Chiropractors, and Osteopaths, and defeated at the same Session as the Naturopathic Bill, by a vote of 59 to 51. Your Committee, owing to the amendments, was not keenly disappointed when it was defeated. A new Bill was prepared and introduced into the House through the Delayed Bills Committee. This was in substance the same as the original Bill; the main change being in the personnel of the Licensing Board. This was House Bill No. 310. Your Committee was able to convince 17 Legislators, who had voted against the original Bill, of the merits of the measure, but you will realize our difficulties when the vote again was 59 against the new Bill and only 51 for it. All 17, who had agreed to support it did so, but 17, who had voted with us before, slipped.

We are adding to this a detailed report by Dr. LaRose. The reason that there are seemingly two reports is that the Committee were unable to arrange for a meeting to prepare the reports; therefore, Dr. Waldren prepared his outline of the activities of the Public Policy and Legislation Committee and Dr. LaRose also prepared one. The Committee are submitting both reports in order that the members of the Association may have the benefits of both. The members of the Committee concur unanimously in both reports.

Senate Bill No. 29. Introduced by Senator Renwick. An act defining the healing art, prescribing pre-professional requirements for the practicing of the healing art, etc., etc. This Bill passed the Senate by a safe-majority but was killed in the House. It was bitterly contested by all the forces and the influence that the members of different cults could bring to bear, the chief contention being that the Bill was an effort on the part of the "Medical Trust" to shut out of the State any form of the healing art except regular practitioners of medicine and surgery. This was so impressed upon many of the legislators that they lost sight of the fact that the Bill had nothing to do with any particular form of healing; that it was merely an effort to set a standard requirement of preliminary education in

order that those who are to be by law permitted to treat human ailments have at least some rudimentary knowledge of the functions of the human body in health and disease.

House Bill No. 76. Introduced by Mr. Lehr and Mr. Erickson. An act authorizing and regulating the practice of Naturopathy in the State of North Dakota. This Bill is similar to the Bill introduced at the Session two years ago. After a long series of shifting from one Committee to another, postponements, indefinite, and otherwise, revivements, revisions, etc., it was finally killed on the floor of the House. If it became a law it would allow anyone who claimed to practice Naturopathy by advising or prescribing food, water, heat, light, color, exercise, etc., for one year prior to the date it became a law to be licensed by the State, without examination to treat all forms of contagious, infectious, and communicable diseases, sign death certificates, have equal rights with other physicians in matters pertaining to disability compensation and in the operation of public institutions. A list of 40 or 50 names was presented as those eligible to be licensed if the Act became a law. It was noted that this list contained names of opticians, dentists and members of different cults with their wives, assistants, office girls, etc. These people were to be turned loose in our State to treat all types of diseases, write death certificates, and become eligible for appointments in our State institutions. Our State Health Department would be compelled to accept worthless reports and death certificates, with the result that the work of years of organization would go for naught.

Senate Bill No. 43. Introduced by Senator Ettestad. An act to provide for the practice of medicine by physicians in hospitals exempt from taxation. This Bill has come up regularly at every session for the past twelve or fourteen years. If this Bill became a law it would take supervision of the hospital staff out of the hands of the hospital management. Control of incompetence, illegal operation, and unethical practice would be very difficult. Considerable pressure was brought to bear by an appeal to the general public through radio broadcasts and personal appeals to members of the legislature. This Bill is usually sponsored by disgruntled individuals for personal reasons. It was killed in Committee.

House Bill No. 86. Introduced by Representative Neewohner. This Bill, known as the Anti-vivisection Bill, was sponsored largely by the NATUROPATHS in collusion with the Anti-vivisectionists. It would prohibit by law the preparation of serums, antitoxins, etc., for curative purposes, and the use of animals for diagnostic purposes. Several high-powered speakers were brought in from Eastern headquarters of the Antivivisectionist Society. They were opposed by Dr. Sheppard, President of the Agricultural College; Dr. French, Dean of the Medical Department of the University of North Dakota, and Dr. L. W. Larson of Bismarck. The Bill was finally killed in Committee, but was later introduced as Senate Bill No. 214 by Senator Patterson. After much emotional oratory, it was killed by the Senate Committee.

House Bill No. 47. Introduced by Representatives Halcrow and Twitchell, to amend and re-enact the State Prohibition Law, in order to allow the purchase, possession, and transportation of pure grain or ethyl alcohol for non-beverage purposes, for use in hospitals, laboratories, clinics, and for manufacturing and indus-

trial purposes. Passed both the Senate and the House.

House Bill No. 67. Introduced by Representative Strutz. Providing for annual registration of physicians and surgeons. Requires every legally licensed practitioner of medicine and surgery to pay an annual registration fee. Passed both House and Senate with few dissenting votes.

House Bill No. 78. Introduced by Representative W. H. Kadell. To regulate the practice of massage and dietetics. The sponsors of this Bill were not strongly supported by the Naturopaths or other cults. If it became a law it would admit to practice many who would compete with the cults on their own ground. The Bill was easily killed in Committee.

The 1930-31 session of the legislature was the most outstanding in bitter opposition for legislation pertaining to the medical profession. The cults maintained a lobby of male and female lobbyists throughout the entire session. Series of dinners were given by them for as many of the members as would attend. High powered speakers were brought in to appear before Committees to oppose medical legislation and to extol the virtues (?) of cult practice in support of their bills. This made it necessary for the Committee to maintain headquarters in Bismarck to successfully combat legislation of the type introduced by the cults. Many of the members of our State Society made one or more special trips to Bismarck remaining several days at a time. It was only through the coöperation of these men and the work done by the members and others throughout the State that we were able to accomplish what little we did. The experience of the last session brings out strongly the need of better and closer organization, the importance of educating the public through our component societies, the keeping in contact with the people and the legislators in our communities, not only for a few month before the Session but at all times, beginning now.

Dr. Fawcett spent the greater part of a week with us working for our measure; Dr. Darrow, several days and nights; Dr. Burton, Dr. Eastman, Dr. Alger, Dr. Crawford, Dr. Greene of Westhope, Dr. Bowen, Dr. Westley, Dr. Zimmerman and Dr. Weeks, a couple of days.

Respectfully submitted,

H. M. WALDREN, SR., M. D.,

V. J. LAROSE, M. D.,

W. H. PORTER, M. D.,

MURDOCK MACGREGOR, M. D.,

Committee on Legislation.

DR. WALDREN: With regard to the registration bill, we realize there is probably going to be some kick from some of the members over the state about our enforcing a tax which it really was the duty of the state to do, but those of us who have served on the medical examining board know what we have been able to accomplish since the medical enforcement act was enacted in 1911.

We have a copy of the articles and by-laws of the naturopathic society, and whereas we in our registration bill made a fee of \$5, these fellows their first year paid \$30 and \$15 per annum. The \$15 per annum was necessary so they could spread

their propaganda and carry on their legislative work.

The preliminary education bill should be put across. Having found out with whom to deal in the legislature, we feel that the committee another year will have little difficulty, if it is seen fit to introduce a new bill, in putting it across.

There was a little mix-up between Dr. LaRose and myself on this bill. I will read his report to supplement what I reported.

[Memorandum: These two Reports later combined into one, as printed in these Minutes. Secretary.]

DR. BURTON: I move the adoption of the report.

The motion was regularly seconded and carried.

REPORT OF COMMITTEE ON MEDICAL EDUCATION

DR. H. E. FRENCH, M.D. (Grand Forks)

June 12, 1931.

To The House of Delegates
North Dakota State Medical Association.
Gentlemen:

Your Committee on Medical Education can report only in terms but slightly different from those of other years.

The School of Medicine at the University continues on the two year or half school plan that is familiar to you. Room and facilities compel it to limit its enrollment to one section of not more than thirty in each of its two classes. This at present enables it to take care of all well qualified applicants from the state, and usually for a very few others, preference being given to residents of neighboring western states. To date no student finishing the curriculum in the School of Medicine has failed to be able to transfer with junior medical standing to some good clinical school, Rush and Northwestern usually absorbing about half of each transferring class. From present indications most of the students will continue to be able to transfer, particularly the stronger three-fourths of each second year class. But it may well happen this year or any year that a few will not find opportunity to go on. Should this occur it is not clear at present how great or serious the problem may be or what may be done about it.

The Committee was interested in the various questions of legislation before the Session of 1931. Particularly was it interested in the proposed anti-vivisection bills, and active in securing their defeat.

The Chairman of the Committee has been broadcasting upon popular health subjects every week throughout the year, and other physicians in the state have also done more or less broadcasting.

The Committee congratulates the Sixth District, or Bismarck, Society in its success in securing the elimination of certain vicious advertising from broadcasts over its local station. The situation is particularly bad with very many stations both within and outside of the state. Any local society within whose territory broadcasting is done would do well to give vigorous

attention to the advertising of nostrums and unscientific devices.

H. E. FRENCH, M. D.,
G. M. WILLIAMSON, M. D.,
N. O. RAMSTAD, M. D.,
C. R. TOMPKINS, M. D.

REPORT OF COMMITTEE ON PUBLIC HEALTH

DR. A. A. WHITEMORE (Bismarck)

Aberdeen, South Dakota,

June 1, 1931.

Your Committee on Public Health submit the following report:

The general health conditions throughout the State are excellent. No unusual epidemics have occurred.

POLIOMYELITIS. A marked increase in the cases reported and number of deaths from this disease for 1930 is noted. 44 cases were reported with 12 deaths. The Department of Health have offered, with the coöperation of the medical profession, to keep available an index of possible donors of blood for the preparation of convalescent serum for use in the treatment of this disease. The response to this offer is rather disappointing.

MENINGITIS. Also increased in both cases reported and number of deaths. The several mild outbreaks occurring at the Mandan State Training School have given the Department some cause for uneasiness.

BOTULISM. Two outbreaks of botulism have been reported in this State during the past year. One near Sentinel Butte with four cases, and one at Grafton with 13 cases reported with 100 per cent mortality. These outbreaks have been very completely written up. Copies of these reports may be had on request.

BIRTH AND DEATH. The reported number of births received up to this time for 1930 are 14,429. The number of deaths are 5,308. The most prevalent causes of death for both sexes, all ages, are, heart diseases, cancer, cerebral hemorrhage. Certain age groups are very interesting. Among the males, ten to 50 years of age, accidents have had first place, while in females of the same age group, tuberculosis has first place with maternal deaths a close second.

INFANT MORTALITY RATES. That index to general standards of living and public health effort shows 984 for 1929 with a rate of 66.9. Maternal deaths for the same period show 82, giving a rate of 5.5.

PREMATURE BIRTHS. The number of deaths with premature births given as the cause is alarming showing an average of 244 during the last five years.

APPENDICITIS. 124 certificates giving appendicitis cases as a cause is far larger than our present day knowledge and skill will warrant.

These last three causes will warrant special study by the profession.

REPORTING OF DISEASES. It can no longer be said that North Dakota's statistical report of communicable diseases are of no value. A recent survey discloses that the State averages 80 per cent reports and that approximately one-half of the medical districts will average 90 per cent or over.

LEGISLATION. Due to an unfortunate psychology of the legislators in common with many other people, our Sanitary Engineering Bureau was discontinued. A few important salaries were reduced with a general

reduction of our appropriations of about 10 per cent. This makes it impossible to do a great deal of constructive work without the coöperation of everyone interested.

FULL TIME DISTRICT HEALTH UNITS. Fargo is still our only local full time health department. The very efficient manner with which it is conducted by its executive officer, Dr. B. K. Kilbourne should be a shining light to the rest of the State. An average of over \$2,500.00 is spent by each county for health work in North Dakota, under an ineffective antiquated, part time system. Two to four counties could pool their interests, making a budget of \$10,000.00 a sufficient amount to run a full time district unit composed of a trained personnel. We endorse a plan of this nature.

NECROLOGY. It is with profound regret that we record here the death on April 9, 1931, of Dr. Arne Oftedal, Fargo, President of the North Dakota State Department of Health.

APPRECIATION AND COOPERATION. The Health Department wishes to take this opportunity to express appreciation to the medical men and dentists for their splendid coöperation.

The Major Projects for the coming year are.

1. Full time district health units.
2. Diphtheria immunization.
3. Periodic health examinations.
4. Permanent establishment of a sanitary engineering division.

A. A. WHITEMORE, M. D.,
G. F. DREW, M. D.,
B. K. KILBOURNE, M. D.,
H. H. HEALY, M. D.

DR. KILBOURNE: I move the adoption of the report of the Committee on Public Health.

The motion was seconded regularly and carried.

THE PRESIDENT: We will next have the reports of Special Committees.

REPORT OF COMMITTEE ON PUBLICATION OF MEDICAL HISTORY

DR. G. M. WILLIAMSON (Grand Forks)

When this Committee made a detailed report of the publication, sale and distribution of the medical history of North Dakota at the annual meeting in 1927 the inventory showed there were 143 histories on hand, and a balance of five dollars and sixty-six cents in the bank.

Since that time 12 histories have been sold, amounting to \$42.00, and there has been remitted to Dr. W. W. Wood, Treasurer, forty-six dollars and forty-three cents; the balance one dollar and twenty-three was used for postage. Several histories have been donated to libraries upon request. At present there are 114 histories on hand, and no bank balance on hand. These books can be procured from any member of the committee or the Secretary of our State Association for three-fifty each.

Dr. James Grassick, to whom the profession of North Dakota are indebted for this history, has material for a second volume, and it might be advisable to consider the appointment of a committee from among the younger men of our Association to study and formulate a plan whereby this valuable material could be used.

At this time I again wish to place on record the appreciation and thanks of every member of the State

Medical Association for the valuable work done by Dr. Grassick in preparing this history. He has given us an everlasting record of the pioneers of Medicine in the Dakotas, particularly of North Dakota. We say God bless Dr. Grassick for the thought that prompted him to take up this work and we want him to know again that his efforts are appreciated.

G. M. WILLIAMSON, M. D., Chairman.

DR. R. G. MAYER (Aberdeen): It was my understanding at the meeting of the joint committee of the North and South Dakota associations that it was decided to have a registration fee of \$3 for this meeting. I should like to know if that meets with the approval of the House of Delegates and the Councilors of the North Dakota Society so we may go ahead with our plans on that basis. I have also been informed that North Dakota decided to give \$500 or more to help finance the meeting. I want to know definitely about that.

DR. L. W. LARSON (Bismarck): When the committee met it was the consensus of opinion that if we were to have an outstanding program we would have to get as many out-of-town men as we could. The question arose as to how we could finance such a program. We didn't know just how much money would be appropriated from the two states. We did not feel that the local Aberdeen Society should be held responsible for paying these men; the men we bring in at least should be paid their expenses. Not knowing what money we had available, we thought a registration fee would be fair, so that each member who attended the meetings and had the benefit of the program would pay something toward the expense. We decided to charge a fee of \$3. The Doctor said he understood North Dakota had always charged a fee. That is not correct so far as I know. At least a fee was not charged in Bismarck, and I don't know that I ever have paid one at any meeting I have attended.

DR. C. E. STACKHOUSE (Bismarck): I think Dr. Larson is mistaken about our method of charging. The custom is to sell each man who registers a ticket to the banquet for \$3, so it amounts to a registration fee.

I move that we pay the \$3 registration fee.

The motion was seconded.

DR. MAYER: The banquet tickets will be included in that registration.

DR. LARSON: What about the \$500?

DR. STACKHOUSE: I think the minutes of the last Councilors' meeting will show that when this committee was appointed it was authorized to engage in an expenditure of not over \$500.

The motion to have a \$3 registration fee was put to vote and carried.

DR. L. B. GREENE (Edgeley): Last year at our first meeting of the delegates we had a rather heated discussion and passed practically unanimously a resolution in regard to the amount of spirituous liquor that each doctor in the state should be allowed. We agreed on five gallons. We were informed at that time that it was only necessary for us to pass the resolution and the Federal Prohibition Department stood willing to allow each doctor five gallons, but a number of the men who made application for it have found there is a lot of red tape and there are a lot of restrictions connected with it.

I think Dr. Larson is in position to explain that to us and clear it up.

DR. L. W. LARSON:

The Committee on the Prohibition Law wishes to report that no new action has been taken since the last meeting of the House of Delegates in Bismarck. You probably recall that a measure was adopted at that time which stated that the doctors had agreed that they should be allowed to withdraw any amount or kind of liquors, provided, of course, that the total amount did not exceed five gallons. This measure was sent to Mr. Qvale, the Prohibition Director. Unfortunately, the American Medicinal Spirits Company felt that it would be a very simple matter for North Dakota physicians to obtain amended permits and circularized the profession to that effect. However, it was soon learned that the Federal Department had certain very definite regulations which made it necessary for the physician to prove that he needed an amended permit. I believe that most of the physicians who did apply for an amended permit became disgusted because of the red tape involved.

I called on Mr. Qvale last Christmas and found that it was quite impossible for him to adopt a different policy because he was necessarily governed by the Federal regulations. However, he assured me that he and his department would be only too glad to cooperate in every way possible.

I doubt that anything more can be done by the profession as a whole. Any attempt to change the State Prohibition Act would, undoubtedly, meet with defeat.

The meeting adjourned at eleven-thirty o'clock.

SECOND SESSION HOUSE OF DELEGATES

WEDNESDAY MORNING, JUNE 3, 1931

The meeting convened at seven forty-five a. m., the President, Dr. Andrew Carr, presiding.

The roll was called and a quorum pronounced present.

The following alternates were elected:

Dr. W. C. Fawcett, of Starkweather, to act in place of Dr. W. F. Sihler for the Devils Lake District, and Dr. Paul H. Burton, of Fargo, to act for Dr. Axel Oftedal, Cass County District.

THE PRESIDENT: The report of the Committee on Necrology was left over from the first meeting.

DR. JAMES GRASSICK (Grand Forks)

COMMITTEE ON NECROLOGY

We are asked to pause in the midst of our activities, to call the roll of rolls of our fellows who, since we last met, have "crossed the bar" and to place a minute on our records to note their passing. As we render this our last tribute to their memory let us drape the empty chairs with kindly thoughts and say, "Let there be peace."

DR. CYRUS NEWTON CALLANDER

Born in Ontario, Canada, February 19, 1865. Graduated from Trinity College, Toronto, Canada, 1897. Licensed in North Dakota January 14, 1899. He practiced at Staples, Minnesota, for two years, and at Fargo, North Dakota, from 1899 until shortly before his death, and died at San Francisco, California, July 30, 1930.

Dr. Callander was one of the best known physicians in the State. He was of the aggressive type and was happiest when blazing new trails. He was one of the founders of the Fargo Clinic and therein established the Department of Orthopedics and Physiotherapy. He was a gentleman of strong yet pleasing personality, an earnest student, and a skilled diagnostician and operator.

DR. ARNE OFTEDAL

Born at Minneapolis, Minnesota, May 21, 1879. Graduated from Hamline University 1901 and licensed in North Dakota in 1902. He began the practice of medicine at Bisbee, North Dakota, and later moved to Halstad, Minnesota, where he remained until 1917. After spending some time in New York taking post graduate work he became affiliated with Dr. Tronnes and Dr. Sand of Fargo, North Dakota, his specialty being pediatrics. This position he held until his death at Fargo, April 9, 1931. Dr. Arne Oftedal came from a long line of professional men. His father, the Reverend Gustav Oftedal, a Lutheran minister of note and influence had the unique experience of seeing his five sons study medicine and become practicing physicians. Dr. A. Oftedal was appointed by Governor Sorlie as a member of the Advisory Council, State Department of Health, of which body he was President at the time of his passing.

DR. JOSEPH ROGERS

Was born at Cedarville, Ontario, Canada, September 26, 1877, and educated in the schools of his native province. He graduated from the Ontario College of Pharmacy in 1901 and in Medicine from the University of Toronto in 1905. He then came West and was admitted to practice in North Dakota in the same year. He located at Donnybrook, Ward County, where he remained until 1914 and then moved to Alexander, MacKenzie County, where he practiced until death at Wilmiston, February 20, 1931. Dr. Rogers was a clean cut, public spirited gentleman, and held many offices of trust and responsibility. He was a country practitioner of the better type and served well a large territory.

* * *

There are four others, former members of our Association who had left the State at various

times prior to their demise, whose death is here recorded. They are:

...

DR. N. J. SHIELDS

Graduated from Baltimore Medical College, 1898, and was licensed in North Dakota the same year. He practiced in Wahpeton, Richland County, until 1912, about which time he removed to San Louis Obispo, California, where he died in 1930, age 58 years.

DR. P. F. KEARNEY

Graduated from University of Minnesota 1904. Licensed in North Dakota in 1905. Practiced at Glen Ullen and Bismarck, North Dakota, and at Great Falls, Montana. Died at San Francisco, California, August 16, 1930, age 52 years.

DR. E. A. CROKAT

Was a pioneer physician of Minot, North Dakota, coming to the State about 1890. He was a charter member of the Northwestern Medical Society of North Dakota organized in 1904. He died in San Diego, California, December, 1930.

DR. ERNEST C. WHEELER

Graduated Rush Medical College, Chicago, 1897, and licensed in North Dakota in 1899. He practiced for a number of years in Fargo, North Dakota, and was Secretary of the State Association in 1905. About this time he removed to Tacoma, Washington, where he practiced until his death in February, 1931, age 58 years.

* * *

When kindred dust claims its own, artificial distinctions vanish. Two more names not from our Roster but with claims on us that are appealing have been added.

DR. THEODORE BRATRUD

of Warren, Minnesota died December 6, 1930, at the age of 58 years. Although living and doing the major part of his professional work in an adjoining State, he was so well and so favorably known throughout North Dakota and so frequently a contributor to the scientific programs of our organization, that he well may be considered as worthy of a place among our own.

DR. JOHN A. MONTGOMERY

Died at Fresno, California, September 30, 1930. He was not a member of the North Dakota Medical Association but his father, Dr. John Montgomery of Ardock, North Dakota, was a charter member as well as its first Secretary-Treasurer. He also introduced and secured the passage in 1890 of the first Medical Practice Act of our then new State. Dr. John A. Montgomery was a product of North Dakota. He was born at the State Capital, November 25, 1899, grew to manhood in the State and attended its schools. His medical course was taken at the Northwestern Medical School, Chicago. He specialized in Eye, Ear, Nose, and Throat and at the time of his demise had won an enviable reputation among his professional brethren. He was a gentleman of splendid ideals and like his distinguished and honored father a worthy representative of a noble profession.

DR. HENRY M. WALDREN, SR. (Drayton): In connection with Dr. Grassick's report, I wish to state that during our session at Bismarck we had occasion to wire Dr. Rogers, who is mentioned

in Dr. Grassick's report, and we received a wire from Mrs. Rogers that the Doctor was ill with typhoid. The wire stated that we should contact the legislators from his district, signing his name, that he endorsed the actions of the Legislative Committee. A few days later we received a report of Dr. Rogers' death.

I think it would be in order for our Association to send word to Mrs. Rogers, appreciating what was done in view of the fact that the Doctor was lying on his death-bed at the time she made the request to us to sign such a report to the legislators requesting them to act in accordance with our desires.

A motion was regularly made, seconded and carried that the Secretary send a letter of condolence to Mrs. Rogers.

THE SECRETARY: In connection with the Treasurer's report which was read at the first meeting, one of the members of the Auditing Committee told me verbally that the report was approved by that committee. Will Dr. Drew certify to that?

DR. DREW: I will certify to the fact that we found the records correct. The thought also came to us, with regard to protecting the funds in the bank, that they ought to be covered by a bond. There are about \$3900, \$1000 of which is in United States or some bonds now, but \$2900 is unprotected.

THE SECRETARY: I imagine that Dr. Wood already is bonded and that the Society pays for that bonding.

DR. DREW: I expect he is, but the idea is if the bank goes, Dr. Wood's bond would not cover that.

DR. WILLIAMSON: I move that the incoming President, Secretary and Treasurer take up this matter and use their judgment in protecting these funds. If they think it necessary that there should be a federal bond or that the funds should be protected in any other way, they should do so.

The motion was seconded and carried, with the suggestion that the committee also investigate the advisability of investing more of the funds in United States bonds.

THE PRESIDENT: We will have the report of the Nominating Committee.

DR. WILLIAMSON: I move that the election of officers be deferred to an adjourned meeting at five o'clock this afternoon, since the Nominating Committee has not yet met.

The motion was seconded and carried.

DR. WILLIAMSON: I should like to have put in the minutes of this meeting a resolution which

will be properly drawn, thanking the members of our Association who took such an active part in promoting legislation for us last year at the session, especially Dr. Waldren, who spent practically all of his time for two months to promoting legislation for the benefit of the Association; also Dr. LaRose, who not only worked faithfully this year, but has been working faithfully for years and years; and that would include all the boys in Bismarck. I understand Dr. Waldren called in Dr. Foster, Dr. Wicks, Dr. Zimmerman, and men from several other towns, and this Association should thank them for what they have done. A proper resolution should be prepared to appropriately thank the members of the Legislative Committee for the work they did during the past session. I so move.

The motion was seconded and carried.

DR. BRANDES: I have a resolution which I should like to present:

"WHEREAS, It has come to the attention of the North Dakota Medical Association that the management of the KFYZ broadcasting station has refused to broadcast material of an unscientific nature that would be detrimental to the health of the individual and the public, and

"WHEREAS, The said management has repeatedly consulted with the members of the medical profession regarding such matters, be it therefore

"RESOLVED, That the North Dakota Medical Association in convention assembled commend and thank the management of the KFYZ broadcasting station for their cooperation with the medical profession in refusing to accept misleading and unethical medical advertising for broadcast purposes."

I move the adoption of this resolution, and that the Secretary be instructed to send a copy to the management of the station.

The motion was seconded and carried.

DR. A. E. SPEAR: I have a report of the committee to investigate the matter of membership locations.

Aberdeen, South Dakota,
June 2, 1931.

Mr. President, Counsellors, and Delegates:

Your Committee appointed last year to investigate the matter of membership locations begs to make the following report:

In as much as there has been a great deal of interest shown in and a lot of discussion on this subject.

And because its importance seems to be increasing to such an extent that it might seriously interfere with the work and perhaps the existence of some of our local medical societies.

And because we believe this should be definitely settled now, and that it is the duty of the House of Dele-

gates to decide this matter, we make the following recommendations:

ONE. That each physician shall upon acceptance and the payment of dues belong to the local medical society in whose district he resides.

TWO. If rejected by his local society he is not eligible for membership in another local society within a year; and then, only upon the recommendation of the society by which he was rejected.

THREE. If any physician shall desire to hold membership with another society, than the one in whose territory he resides, he may do so providing that he shall (a) obtain the consent in writing of the society in whose jurisdiction he resides, (b) and be accepted by the local society to which he wishes to belong.

FOUR. In the case of physicians already belonging to societies in other than their own district consent must be obtained from the society of their district and presented to the society of which they are now members before January 1, 1932.

FIVE. No local society shall have the right to accept money in payment of dues or extend membership to a physician residing outside of their territory, without the written consent of the society in whose territory said physician resides, said written consent to be obtained from the secretary of said society, after having been granted by a vote of that society.

SIX. That upon adoption, these recommendations shall govern all local societies and members in their relations; and that a copy of these recommendations shall be sent to the secretary of each local society by the secretary of the State Medical Society.

Respectfully submitted,
W. C. FAWCETT, M. D., Chairman.
A. E. SPEAR, M. D., Secretary.

Aberdeen, South Dakota,
June 2, 1931.

Mr. President, Counsellors, and Delegates:

In addition to the preceding, your Committee begs to submit the following:

It is the opinion of your Committee that on account of more convenient transportation facilities, with its general trend toward centralization, we will shortly see the small local societies absorbed by, or amalgamating with the larger societies, and we believe such an arrangement will the better serve the purposes of the medical profession of the State.

We believe that this change should be brought about by action of the societies themselves, as it has already begun in the union of the Southwest district and the Stark County Society without interference by the State Association.

Instead of 12 or 13 societies, varying greatly in size, we believe six or eight strong local societies would better serve our purpose, strengthen our organization, make less work for the state secretary, and be of greater benefit to the individual members.

We suggest that in this division, each district should contain one of the larger medical centers along one of the two lines of railways which traverse the state from east to west. In following this plan, the districts would naturally group themselves around the following cities as centers; Williston, Minot, Devils Lake, Grand Forks, Fargo, Valley City and Jamestown, Bismarck and Mandan, and Dickinson.

We believe that the state society should exercise some jurisdiction over these changes and recommend

that this re-division be under the close supervision and control of the House of Delegates.

Respectfully submitted,
W. C. FAWCETT, M. D., Chairman.
A. E. SPEAR, M. D., Secretary.

Dr. Spear moved the adoption of the two reports.

DR. WILLIAMSON: I second the motion, with the addition that the Secretary be instructed to send copies to the secretaries of the component societies.

DR. FAWCETT: We don't want any of these societies to feel that they can pull right out and quit. We have only presented it in that manner because we expect the time will come when they will want to join and make the society larger. We don't want the counties to feel we are trying to legislate them out of business; we are simply planning for the future when they will all unite and there will be fewer but larger societies.

THE PRESIDENT: As I understand, this will be left to the discretion of the small societies.

DR. FAWCETT: Yes.

The motion was carried.

THE SECRETARY: Selection of a meeting place for next year. Dr. Williamson hands us the following letter from the Grand Forks Chamber of Commerce.

CHAMBER OF COMMERCE

Grand Forks, North Dakota,
May 28, 1931.

North Dakota State Medical Association
In Convention,
Aberdeen, South Dakota.
Gentlemen:

The Grand Forks Chamber of Commerce wishes to supplement the invitation of the Grand Forks members of your Association to hold your 1932 annual convention in our city.

We know that the meetings which you have held here in the past have been very enjoyable ones, and we will take great pleasure in co-operating in every way possible to make your next one as successful and pleasurable as those in the past have been.

Hoping that the Grand Forks invitation will be favorably received, we are,

Yours very truly,
W. W. BLAIN, Secretary.

DR. BURTON: I move that the 1932 convention of the North Dakota Association be held in Grand Forks.

The motion was seconded and carried.

THE PRESIDENT: The Northwestern District Medical Society gave me privilege to ask the state society to come to Minot next year, with the provision that no other town really wanted it. I have just received a telegram from the Association of Commerce inviting the society to Minot,

but it didn't have the codicil attached to it that the Northwestern District had.

THE SECRETARY: I wish to call attention to the request from Memphis and New Orleans that our delegates vote in favor of either one of those places for the A. M. A. meeting in 1932. Memphis calls attention to the fact that inasmuch as they are going to take care of the American Dental Association in October, they certainly ought to be able to take care of the A. M. A.

THE PRESIDENT: I don't think it is necessary to make any resolution, but it should be brought to notice.

DR. H. E. FRENCH (Grand Forks): Mr. President and Members: Your Committee on Minnesota Medicine met with Dr. Christisen and other representatives of Minnesota Medicine. Their proposition was very much as outlined to this group the other night. They will give us an interest in the Journal as it stands, or they will go right ahead with it and let us become members and receive the Journal by paying, as they do for their members, \$2 a member. It is a nice proposition, and I think we all know that Journal. But THE JOURNAL-LANCET, as far as we can understand, is practically the same; we are paying them \$2 a year. You know the Journals, I think. As I have talked to the men both in this Society and in the South Dakota Society, the choice is quite divided. I think our committee last night was inclined to stay with THE JOURNAL-LANCET, at least for a year. I suppose that is all we could take action on anyway, but we were inclined to recommend that we let THE JOURNAL-LANCET try it out for another year. They have made good promises. I think that would mean a little better organization.

If we do that, the Council should elect the members that are on that Board, South Dakota should elect its members, and that Board should organize and choose its chief.

In talking with some of the South Dakota men it seems doubtful what that Society will do. I think our recommendation can only be that the Council coöperate with or meet with the South Dakota Council and they jointly make a decision.

THE PRESIDENT: That will be done.

The meeting adjourned at eight thirty-five o'clock.

THIRD SESSION HOUSE OF DELEGATES

WEDNESDAY AFTERNOON, JUNE 3, 1931

The meeting convened at five-thirty o'clock, the President, Dr. Carr, presiding.

DR. WILLIAMSON: This morning, Mr. President, it was decided that I would bring in a resolution regarding the work done at Bismarck.

"RESOLVED, That the members of the North Dakota State Medical Association assembled in Aberdeen, South Dakota, wish to place on record our appreciation of the efficient and effective work performed by members of our Association during the late session of our legislature. We wish especially to commend the work done by Dr. Waldren, who gave up his practice at Drayton and took up residence in Bismarck in order to better serve the profession of our state; also Dr. V. J. LaRose and his associates at Bismarck who gave time and energy to the profession they love; as well as many other men living in various towns in the state who went in response to calls from Dr. Waldren to help him.

"BE IT FURTHER RESOLVED, That we appreciate the untiring efforts of Dr. Waldren, Dr. LaRose and others, and that a copy of this resolution be forwarded them by our Secretary."

I move the adoption of the resolution.

The motion was seconded and carried.

DR. CRAWFORD: I should like to see inserted the name of Dr. Porter. I think he coöperated wonderfully.

DR. WILLIAMSON: Dr. Porter and Dr. Stucky being members of the legislature, they are in a little different position, but I have no objection. This resolution was meant mainly for our members who contributed help.

THE PRESIDENT: Election of Officers.

DR. N. O. RAMSTAD (Bismarck): The Nominating Committee appointed by the Chair, Dr. W. C. Fawcett, Chairman; Dr. John Crawford, and myself, have unanimously agreed on the following recommendations:

President, Dr. H. M. Waldren, Sr., Drayton.

President-Elect, Dr. Paul H. Burton, Fargo.

First Vice-President, Dr. J. W. Bowen, Dickinson.

Second Vice-President, Dr. C. E. Stackhouse, Bismarck.

Secretary, Dr. Albert W. Skelsey, Fargo.

Treasurer, Dr. William W. Wood, Jamestown.

Delegates to A. M. A., Dr. Albert W. Skelsey, Fargo; Dr. W. C. Fawcett, Starkweather.

EXAMINING BOARD

W. H. Long, M.D.

H. F. Emert, M.D.

J. E. Countryman, M.D.

COUNCILORS TO REPLACE THOSE WHOSE TERMS EXPIRE

Second District, G. F. Drew, M.D., Devils Lake.

Seventh District, P. G. Arzt, M.D., Jamestown.

Eighth District, L. B. Greene, M.D., Edgeley.

Tenth District, A. E. Spear, M.D., Dickinson.

COMMITTEE ON MEDICAL DEFENSE

H. H. Healy, M.D., Chairman.

E. P. Quain, M.D.

E. A. Pray, M.D.

W. C. Fawcett, M.D.

E. M. Ransom, M.D.

John Crawford, M.D.

COMMITTEE ON MEDICAL EDUCATION

H. E. French, M.D., Chairman.

George M. Williamson, M.D.

N. O. Ramstad, M.D.

C. R. Tompkins, M.D.

THE PRESIDENT: The Constitution provides that election shall be by ballot.

DR. WILLIAMSON: I move the rules be suspended and the Secretary be instructed to cast the unanimous ballot of the House for the officers recommended by the Nominating Committee.

The motion was seconded by Dr. French and unanimously carried.

DR. N. O. RAMSTAD: I move that Dr. Paul Freise be elected alternate to replace Dr. Stackhouse at this session.

The motion was seconded and carried.

DR. RAMSTAD: This morning the Councilors considered THE JOURNAL-LANCET and Minnesota Medicine proposition and went over the pros and cons for both organizations. You realize that there are some features about THE JOURNAL-LANCET that are not quite satisfactory. At the same time, we were not thoroughly familiar with Minnesota Medicine. The Minnesota Medicine people made us a very attractive offer, and we are taking it under consideration, but the members of the Council decided this morning not to make any change for the coming year, but to study the situation carefully. They appointed a committee of three to try to keep in close touch with the situation. This committee is going to call on the members of all the component societies, lay the matter before them, and ask them to instruct their delegates to act on this matter at the next annual meeting of the Society in case matters are not satisfactory. This committee will probably call on you for aid and assistance sometime

after January 1. We tried to do the very best we could, and everybody finally concurred in the recommendation.

The Council passed a resolution that may be somewhat superfluous, but we thought the time might come when we would have considerable funds on hand, and we wanted to safeguard those funds in every way possible.

It is moved that a committee consisting of the President, the Secretary, and the Treasurer be appointed to confer with the Treasurer and see what measures can be taken to safeguard any funds of the Association that might be kept in the banks. It was left to their judgment as to how to handle those funds.

DR. KILBOURNE: I move a vote of thanks to the South Dakota Association and the local society of Aberdeen for making possible this joint session and for their entertainment during this time.

The motion was seconded by Dr. Fawcett and carried unanimously. The meeting adjourned at five forty-five o'clock.

PROCEEDINGS OF THE COUNCIL OF THE NORTH DAKOTA STATE MEDICAL ASSOCIATION

JUNE 2, 1931

Members present: J. W. Bowen, M.D., Chairman; G. M. Williamson, M.D., Secretary; F. L. Wicks, M.D., G. F. Drew, M.D., N. O. Ramstad, M.D., L. B. Greene, M.D., and P. H. Burton, M.D. (alternate for M. MacGregor, M.D.).

The minutes of the last annual meeting approved.

The Chairman appointed as Auditing Committee: Drs. G. F. Drew, N. O. Ramstad, and F. L. Wicks.

A general discussion was then had as to the rearrangement of districts for component societies, and as to what action should be taken in regard to the official journal for the Association. A committee was appointed, Dr. N. O. Ramstad, as representative from the Council to act in negotiating arrangements for an official journal, with the Educational Committee of this Association, and a similar Committee from the South Dakota Association.

Meeting adjourned.

SECOND MEETING OF THE COUNCIL

THURSDAY, JUNE 4, 1931

Members present: J. W. Bowen, M.D., Chairman; G. M. Williamson, M.D., Secretary; Drs.

F. L. Wicks, L. B. Greene, N. O. Ramstad, G. F. Drew, and P. H. Burton (alternate for M. MacGregor, M.D.).

The Auditing Committee, Drs. Drew, Wicks, and Ramstad, reported that they had examined the Treasurer's books and found them correct. Also, they recommended that a committee consisting of President Waldren, Secretary Skelsey, and Treasurer Wood be appointed to see that the funds of the Association be properly safeguarded. The report of the Auditing Committee adopted.

Moved by Dr. Ramstad, and seconded by Dr. Wicks, that the Secretary receive a salary of four hundred dollars a year, beginning with the year 1931. Carried.

Moved by Dr. Ramstad, and seconded by Dr. Drew, that a Committee of three members of the Council be appointed to investigate the relative merits of *THE JOURNAL-LANCET* and of Minnesota Medicine during the coming year with the purpose of ascertaining which publication would best serve the medical profession of North Dakota as their official journal; to place their findings and recommendations in the form of a letter or statement to be submitted to each component society in the State after January, 1932, with request that said component societies shall consider the matter and render their decision and report the results of the referendum and vote, to the Council at the next annual meeting. Carried. Chairman Bowen appointed such committee consisting of Drs. Ramstad, Drew, and Wicks.

Moved by Dr. Drew and seconded by Dr. Wicks that Drs. J. P. Aylen, Fargo; H. E. French, Grand Forks; A. D. McCannel, Minot; and J. O. Arnson, Bismarck, be appointed as Associate Editors of *THE JOURNAL-LANCET* for the year 1931. Carried.

ELECTION OF OFFICERS

On motion, Dr. N. O. Ramstad was elected Chairman, and Dr. G. M. Williamson was elected to succeed himself as Secretary of the Council. Meeting adjourned.

GEORGE M. WILLIAMSON, M.D.

Secretary of the Council.

PRESIDENT'S ADDRESS

By ANDREW CARR, SR., M. D.,
Minot, North Dakota

A BRIEF HISTORY OF MEDICINE

Were I to be granted a single wish, in rising to address this assembly, it would be that you, my associates, are as impressed today as I have been throughout the past year, with the tremendous

responsibilities placed upon us during the last decade.

In order to appreciate and comprehend the astonishing advancement made in the methods of medicine and surgery during the last two or three generations, it is necessary for us to consume a few minutes in glancing over the many centuries of medical history.

The cult of medicine is as old as birth, illness and death, and its origins are intimately connected with the beginning of the religions of fear and taboo. Even today the priests of many faiths and the medical advisers of the uneducated and ignorant and of the semi-civilized peoples are embodied in one and the same person. The medicine-man of the American Indian and the voodoo priests of the African tribes have their counterparts among many peoples now living under primitive and tribal conditions. In fact a recent conviction for murder in the state of Pennsylvania presents a picture of two men and a boy of fourteen years beating an old man to death in order to free one of them from being "hexed" or bewitched on the plea that the victim was a witch. A similar case was recently reported from a rural community in Hungary, but in that instance the murderer was acquitted. The latest religion to be invented, and that too in the Eastern United States, with its semi-deification of an hysterical woman, is a case in point. It is difficult to decide whether the tenets of this sect are more harmful to the souls of its adult devotees or in the medical neglect of the innocent children forced by parental authority to submit to the treatment of their physical ailments exclusively by an emotional appeal.

There is a historical record of medical usages scattered through the general books of early history and literature, but only a few "books" of an exclusive medical content date back into the fifteen centuries before the time of Hippocrates. Medical points of view dating from two thousand years B. C., are preserved in the Brahman records of India, in those of the followers of Zoroaster, in the cuneiform inscriptions on the monuments of the Assyrians and Chaldeans, and in the papyri of Egypt and the ancient texts of the Hebrews. Among each of these peoples medicine was a cult and existed with its tutelary gods and goddesses and its religious priests. Later when these became lay practitioners the first physicians were recognized as such.

The practice and tradition of medicine were handed down by an exclusive fraternity, whether lay or sacerdotal, among the Indo-Iranians, in the

valleys of the Tigris and Euphrates, in Egypt, and without doubt as part of the culture of Minoan civilization from which Greece developed. The names of the gods of medicine of the Greeks are of some interest. Apollo was the chief, Esculapius the lesser deity, and the daughters of Esculapius, Hygeia and Panacea, were the goddesses. The ancient medicine of the Greeks was not different for many centuries from that out of which it grew. But medicine developed in Greece as all else developed, and as Greece became the center of excellence in art, in literature, in politics, Grecian medicine rose above all previous knowledge, and the books of Hippocrates, though full of errors from the modern view-point, stand today as the first known record of medical experience associated with a scientific and rational system of philosophy and practice.

Man has always been inclined to explain phenomena which he does not understand, on the basis of the supernatural. As education and enlightenment have progressed, the role of the supernatural in the production of natural phenomena has assumed a decreasing importance. The history of medicine begins with man's conception of disease as a phenomenon brought about by supernatural agencies. The nature of these agencies differed with different races in accordance with their form of religion and folk-lore. Man, while in the early stages of intellectual development, is always priest-ridden, and his medicine is controlled by superstition and taboo. Primitive races regarded disease as a result of the invasion of the body by demons which must be placated or exorcized. To prevent the resulting disease, charms and amulets were worn. This, it might be said, was the earliest form of preventive medicine. When the demons effected entrance into the body various grotesque practices were indulged in to induce these evil spirits to leave. Often the individual was subjected to vigorous rubbing and pommeling—the earliest form of massage—or was subjected to fumigation with unpleasant and offensive vapors. The rationale of such treatment rested on the supposition that the demons would find the application of the treatment ever more distasteful than did the sufferer, and so depart.

Historically, probably the oldest surgical operation is that of trephining. This procedure was practiced by prehistoric man with flint instruments. The object for which a hole was made in the skull was to allow the easy egress of the demons of disease from the body. The disks of bone thus removed were perforated so that they

could be worn around the neck and were treasured and worn by other individuals to ward off a similar disease.

The developing philosophy of medicine in the years before Hippocrates, even one thousand years before, among the Iranians, the Egyptians and Chaldeans, was founded on the assumption of four fundamental elements: water, earth, fire, air; among the Hindus a fifth essential element, ether, or spirit, was added. Health was the retention of a proper and regulated association of these elements in the living body; disease was a change in such harmonious action; death was the loss of the *pneuma* or spirit, and the resulting coagulation of the blood. The practice of these physicians has left its mark on the methods of today, as is evidenced by the use of emetics and purges in acute diseases, of poultices, enemata and ointments. The internal administration of such modern drugs as niter, sulphate of copper, and alum was common. In Egypt there were physicians who specialized in diseases of the eye, the head, the teeth, as well as in internal diseases.

The physicians of these centuries freed themselves from priestly dominance but inherited a tradition of discipline and procedure that was both rigid and exacting. They were held to a strict accountability for their care of the individual by an oath more ancient than the better-known form attributed to Hippocrates.

The oath of the Hindu Physician is transcribed thus in *The Peak of Medical History*, Charles L. Dana:

"You must be chaste and abstemious—speak the truth—not eat meat—care for the good of all living beings—devote yourself to the healing of the sick, even if your life be lost by your work—do the sick no harm. Not even in thought, seek another's wife or goods. Be simply clothed and drink no intoxicant—speak clearly, gently, truly, properly—consider time and place. Always seek to grow in knowledge. Do not treat women except their men be present—never take a present from a woman without her husband's consent. When the physician enters a house accompanied by a man suitable to introduce him there, he must pay attention to all the rules of behavior in dress, deportment and attitude. Once with his patient, he must in word and thought attend to nothing but his patient's case and what concerns it. What happens in the house must not be mentioned outside. Nor must he speak of possible death to his patient, if such speech is liable to injure him or any one else. In face of gods and man, you can take upon yourself these vows, may

all the gods aid you if you abide thereby, otherwise, may all the gods and the sacra, before which we stand, be against you."

The pupil shall consent to this, saying, "So be it."

The discovery at Susa in December, 1902, of a stone inscribed with cuneiform characters carries the known control of medical practice by law back to 2250 B. C. The text determines the fees for medical services and the penalties for malpractice in many instances of treatment of disease and of surgical operations. Two sample edicts from this Code of Hammurabi will suffice to appreciate the whole: "If a physician open an abscess (in the eye) of a man, with a bronze lancet and destroy the man's eye, they shall cut off his fingers," and again: "If a physician operate on a slave of a freed man for a severe wound with a bronze lancet and cause his death, he shall restore a slave of equal value." Such stones carrying full legal details were undoubtedly set up in public places in many cities of the Babylonian Empire. This one stood in the Acropolis of Susa; it is over seven feet high and was erected during the reign of Hammurabi, sixth king of the first dynasty of Babylon. The physician of these earliest days was controlled by stringent laws administered by government and by moral obligations formulated by his colleagues and sworn to by him on being admitted to the exclusive circle of the profession.

Medicine is the most difficult of sciences and the most laborious of arts; it taxes the powers of body and mind. A doctor who is true to the ideals of his profession will not place a monetary value as his first consideration on his services, but the welfare of the patient and the restoring of his health should be the first paramount consideration in his mind.

Thomas A. Edison says that he believes that the most important discoveries in the future will be in the realms of Health. He expects Biologists and Chemists to lead the way in scientific research, although it might be better to qualify the celebrated inventor's statement by suggesting that biologists and chemists will make discoveries rather than contrivances.

Mr. Edison apparently bases his prediction on the simple idea that "necessity is the mother of invention."

He would apply this also to research and discovery. "There is too much sickness," he declares. Something must be done, and here is

where biology and chemistry come in. He thus puts dependence in humanity's recognition of an obligation to itself and its development of super efficiency in solving the difficult problem of its own ills. None of which is to be taken to mean that either biology or chemistry has lagged behind while other sciences have made great progress. Rather it is to admit that in the realm of human health, there is a vast amount of knowledge yet to be learned. The physician and the surgeon readily admit that it is only the beginning of great things, that we are but on the threshold of wonderful discoveries. Man has been his own greatest mystery. He has understood far more about other things than about himself. One gets the impression after looking back over the tedious and difficult progress that the medical profession has made, that the human animal is possessed of an endless array of peculiarities and mysteries. No other specie approaches it in this respect, which probably is due to the fact that man's environment is entirely different. In addition, man is a much more sensitive creature than any other in the animal kingdom. Thus the physician and the surgeon are obliged to study not only the results as to ills, but to search for the causes, the ramifications of which take them into almost every field of human endeavor.

And after all it must be admitted that in the art of prevention and healing there has been more real progress made during the last two hundred years than in all the previous history of mankind.

The first man to master a disease was Edward Jenner, who conquered smallpox in 1796. That loathsome disease had been the scourge of the Eighteenth century. In the course of one century it destroyed more than sixty million lives, and left but few untouched by its disfiguring and mutilating ravages. Jenner accidentally heard a person remark that a certain person could not have smallpox as she had already had cow pox. He brooded over that remark until he mastered its meaning, and had elaborated in his own mind the process of vaccination as a preventative against smallpox. The long contemplated experiment tried at last was a complete success. The noble benefactor of the human race made mankind the beneficiary of his discovery, and refused to become rich on the necessities of his fellow men. The conquest of smallpox as a widespread menace has been the result.

And yet, in this so-called enlightened age of the world, we have many ignoramuses who dis-

pute the beneficence of this, one of the greatest discoveries the world has ever known.

LOUIS PASTEUR revolutionized the science of medicine. He immunized the wine and beer industries of France; he saved the silk-worms, and so saved the silk industry of his nation. He inoculated chickens for cholera, sheep and cattle for anthrax, and human beings for hydrophobia. He pioneered the way into the beginnings of bacteriology. When he overthrew the time-honored dogma of the spontaneous origin of disease, the shining era of modern medicine began.

KOCH—Robert Koch made bacteriology a science, and discovered the bacillus of tuberculosis.

LISTER—Lord Lister, the British surgeon, saw the application of Pasteur's discoveries to surgery and elaborated the sterilizing routine that has given the world the brilliant chapter of aseptic surgery.

REED—Walter Reed applied these advanced methods to the problem of yellow fever. He and his associates, in Cuba, proved that yellow fever spreads by the bite of a mosquito—the female *stegomyia fasciata*. He elaborated the routine for eradicating that dreaded pestilence from Southern cities.

INSECT-BORNE DISEASES—The forces of healing have moved forward in three columns. One division has attacked the insect-borne diseases; and many of them have yielded, such as yellow-fever, typhus fever, and malaria.

SALIVA-BORNE DISEASES—The second division of the healing army moves against the saliva-borne diseases and many of them have yielded; others have begun to give way. They are such diseases as scarlet-fever, diphtheria, measles, and tuberculosis. In the graphs drawn to show the declining death rate in each of these, the black column gets shorter as the years go by. Someone calls it "climbing down the black mountain."

FILTH-BORNE DISEASES—The third column attacks the filth-borne diseases. The most startling results have followed and deadly scourges have been brought under almost complete control, such as typhoid-fever, Asiatic cholera, hookworm, diarrhoea, dysentery, bloody flux, cholera morbus, summer complaint, ileo colitis, and others. These are filth diseases pure and simple. For ages the "Slaughter of the Innocents" went on and pious ones in their ignorance said, "the will of the Lord be done." The Lord showed through Moses, one of the world's greatest sanitarians, that he willed his people to be well.

GENESIS OF THE MODERN HOSPITAL—Let us note how all this is related to the modern hospi-

tal. The work of Pasteur and Koch have made the elaborate hospital laboratory a necessity, together with the laboratory technician. The work of Roentgen made necessary the costly and immensely useful X-ray apparatus with its technician. The work of Lister made the expensive operating room with its sterilizing facilities necessary. The work of Florence Nightingale made the nurses' training school necessary. By reason of these advances, the modern hospital has become a highly specialized, highly expensive, and highly efficient agency of healing, and the headquarters of public health. The health of the people is the wealth of the nation. The era of hospital building in America has been the era of declining death rates. The life-average of the American people has risen from 35 years to around 55 years.

The medical profession has done more for the race than has ever before been accomplished by any other body of men. These gifts to the people have come in the form of vaccination, sanitation, anesthesia, aseptic surgery, the new science of bacteriology, and the new art in therapeutics, have effected a revolution on our civilization to which can be compared only the extraordinary progress in the mechanical arts. The new knowledge and technique, the improved equipment and the well-trained personnel, which are the indications of this extraordinary progress, have not yet been made available generally.

This present century is perhaps the most remarkable in the world's history, both in the accomplishments of the past thirty years and in the promise of the coming days. The discovery of some great principle available in the work of the world will not surprise any thinker. It is in the air.

Medicine has not taken a second place in these great discoveries. While they have not been exploited and published in the same way as the segregation of the electron, for instance, they have revolutionized medical procedure, so much so that the older practitioners have found it necessary to take a "post-post-post-graduate" course to keep in stride with these modern developments.

Perhaps the most significant in its relationship to modern life, at least the most popular, is that which has to do with what the public generally calls "anti-toxins." Especially has that dangerous disease of childhood, diphtheria, been compelled to bow before the onslaughts of our modern medical chemists. The Klebs-Loeffler bacillus, found nowhere in nature except in the human body, can

be grown in a culture and the multiplication of these bacilli encouraged. There is, however, a large difference in these cultural bacilli, in that, while their virility in susceptible persons is acute, in that, through chemical processes of filtration, a highly poisonous substance could be removed from the broth cultures, and that this broth, thus freed from this poison, could still produce the lesions of diphtheria with other characteristic symptoms. However, it was discovered that guinea pigs, which are practically alone in their susceptibility to diphtheritic conditions, could be given small doses of this anti-toxin, and that as a result there came to be created within their blood a substance capable of neutralizing the diphtheria toxin. When these experimental animals were given a large dose of toxin, the injection of the anti-toxin, immediately and apparently miraculous recoveries followed. The germ free culture of the *Kleb-Loeffler bacillus* injected into the horse gives rise to a substance in the body of a horse which was not there before—or at least, not in abundance—and which in practice has proved a specific remedy for diphtheria. Now the preventive side of the matter lies in this respect, that injection of the anti-toxin has the power of rendering the person impervious to the attack of the diphtheritic bacillus, and thus prevents an attack of that disease.

In New York during the last five years the diphtheria mortality was reduced 75 per cent over the previous five-year period. The diphtheria death rate in New York state is approximately a little over 2 per 100,000. A continuation of the intensive educational campaign to have children immunized will eventuate in the utter disappearance of this disease.

What has been done in New York state can be done everywhere. Diphtheria will follow the paths of cholera and yellow fever and other diseases of infectious origin, which today are rapidly diminishing in volume. What is true of diphtheria may be true in the next few decades of measles, whooping cough, and scarlet fever.

We may look forward in confidence to the realization that children may reach adolescence, not only free of these diseases, but what is of equal importance, free of their damaging sequelae which frequently manifest themselves in adult life.

The picture, therefore, which we have today is the prospect of the disappearance eventually of most, if not all, diseases of germ origin. Newer researches will give us additional informa-

tion regarding certain diseases, whose causes have not as yet been definitely ascertained. It is one of the ironies of the situation that we still know comparatively little about the most common disease. I refer to the common cold. Here, too, there are indications, even more than indications, that we are on the verge of discovering its cause. When we shall have found it, we shall have made great progress and shall have relieved humanity of the most frequent cause of debilitating illness.

Sleeping sickness, infantile paralysis, and pneumonia are in the same category. As yet, research in these fields has not reached the point of completion so that we may know how to prevent them. But anyone who follows the research work now being done in many laboratories, cannot help but feel that in these fields as well we shall soon know not only how to cure, but how to prevent.

Perhaps leprosy and its treatment does not exactly come under the name preventive, yet the recent strides which have been made in the care and treatment of this disease lead the medical profession to believe that leprosy can be stamped out entirely in another generation. The isolation of the bacillus was done in 1874 by Hansen, but for years no knowledge of means for its eradication could be discovered. Natives of the far East have known for centuries that by rubbing the affected parts with chalmugra oil they obtained relief, but it was not until 1918 that Dr. Rogers, a prominent British surgeon in India succeeded in making the oil into a soap, which proved to be a more practical method than had heretofore been used. At the same time, Dr. Dean, President of Hawaii University in later years, then digested chalmugra oil in alcohol and sulfuric acid, which administered intramuscularly was a wonderful success. He at the same time found that certain entirely different oils, notably cod liver oil, which had no effect when taken through the mouth, was of distinct advantage when injected intramuscularly. However, the results were not as satisfactory as those received by the use of chalmugra oil.

But modern science has discovered the formula for the chalmugra acid molecule which has the curative effect, and the task of preparing chemically a remedy which will react upon the disease with correct results, appears to be imminent. The most important factor in this medical discovery is that of prevention, for which it was believed that segregation was the only method, but it has been discovered that treatment is of

far greater value than isolation, and the surgeons of India are expecting that through preventive methods this disease will soon be conquered.

Glandular discoveries have transformed medical methods to a large extent during these past thirty years. The use of throxin as an agent in the development of the thyroid gland; the work on the pituitary and endocrines are almost miraculous in their results.

Time and space forbids more than a brief mention of the gigantic discoveries of Dr. Paul Erlich, the discoverer of salvarsan, and its correspondingly vital worth to many of the diseases of the land, specifically that of syphilis and other similar medical problems. The work in anesthesia has been tremendous, and the extraction of the disturbing element in cocaine giving to the medical world such local anesthetics as novocaine, which can be administered without those after effects resulting in drug forming habits are of fundamental worth.

The dye industry furnishes one of the most important of medical preventives in the use of a dye which arrests the bacterial growth, especially in operations of a gangrenous nature. Corresponding with this task must be mentioned the work in the coal tar products, the phenol derivatives, giving to us as one, Aspirin, of universal use. May we in closing mention one other discovery, that of barbitol and its closely allied ureides. Introduced into this country recently is phenobarbital. Its preparation was carried out in the Kent Chemical Laboratory in the University of Chicago, and the news of the discovery of this active ingredient resulted in the institution being flooded with letters from physicians, epileptics, and most pathetic of all, from parents of epileptic children begging for some amount, however small, of this sedative which, on account of its specific action upon the section of the brain known as the motor area, which controls the nerve impulses to the muscles, is peculiarly suitable for the treatment of diseases where muscular control is essential, for instance as in epilepsy. This drug serves to both prevent and alleviate epileptic seizures, and is of value in St. Vitus' dance.

This is but a fragment of the advances that have been made along preventive lines. It will take a library or two to fully cope with these gigantic strides leading to the complete emancipation of humanity from the ills that beset it.

Dr. Ray Lyman Wilbur, the Chairman of the Committee on the costs of Medical Care, recently

said: "Three years ago the Committee on the Costs of Medical Care began its study of a problem of the utmost importance to the whole people of the United States. What that problem is may be found in this statement of six principal objectives:

"1. How can the medical facilities of the country be so distributed as to bring adequate medical care within the reach of all population groups?

2. How can well-trained physicians be assured of a reasonable amount of work and of the necessary scientific equipment?

3. How can waste of time and money in visiting several unassociated practitioners for a single ailment be reduced and the patient be assured of competent service?

4. How can the people be educated to avoid the waste of money on inferior types of treatment and useless medicine, and to seek modern scientific care?

5. How can the support of both practitioners and patients of the preventive procedures be made available by medical science?

6. How can the ordinary family provide against the uncertain financial burden of sickness, which may be very large in proportion to the family budget, and which is likely to be very uneven, month by month and year by year?"

Such a problem as this is one of peculiar complexity. There is the widest variance of view between the producer of medical care, the practitioner, and the consumer of medical care, the patient.

Coöperation of extraordinary generosity and of the highest technical quality has been given to this work. When the work shall have been finished, two years hence, it will represent an expenditure of more than \$1,000,000. This comes from the Milbank Memorial Fund, the Twentieth Century Fund, the Carnegie Corporation, the Russell Sage Foundation, the Julius Rosenwald Fund, the Rockefeller Foundation, the New York Foundation and the Josiah Macy, Jr., Foundation. Eight national agencies and an even larger number of state and local health departments and visiting nurse societies are contributing services conservatively valued at more than \$315,500.

To summarize the data in the briefest possible way, we have found that:

There are each year in the United States about 130,000,000 days of illness—an average of a little more than one day per person. It is probable

that the money cost of illness reaches \$5,000,000,000 a year.

There are approximately 1,500,000 persons employed, full time, in the care and prevention of illness, of whom 143,000 are physicians, with some 32,000 other practitioners—chiropractors, osteopaths, and the like.

There are 7,310 hospitals in the United States, built and equipped at a capital cost of \$3,125,123,000, exclusive of \$437,000,000 of endowment, and having 904,934 beds, which care each day for 700,000 patients.

Dear Members of this Association:

We are the servants of humanity and have a humanitarian service to perform.

Before closing I must mention for the benefit of our younger doctors, at least one element of success, relative to our profession—that is, THE

ABILITY TO GAIN CONFIDENCE.

All confidence which is not absolute and entire is dangerous.

We take it that, after all, here is the only lasting basis for attraction in social intercourse, and the only enduring foundation for genuine and profitable friendships. Confidence, mutual admiration—those reciprocal interchanges which, while they are real luxuries to the soul, yet never pall upon the appetite, cannot exist upon a substratum of pretense or affection; but are restful

and abiding only when men among men, and women toward women or men, know that there is real ground for a full sweep and abandon of mutual confidence.

Confidence always gives pleasure to the man in whom it is placed. It is a tribute which we pay to his merit; it is a treasure which we entrust to his honor; it is a pledge which gives him a right over us, and a kind of dependence to which we subject ourselves voluntarily.

In the Austro-Prussian War the Austrian soldiers lost all confidence in their generals, and after two or three defeats not only ceased to fight with spirit, but were changed into a panic-stricken rabble; whereas the Prussians, having confidence in the ability and courage and fidelity of their leaders, marched from victory to victory.

My Fellow Practitioners, I thank you for your patience in listening to this rather lengthy and somewhat abstract and general address. I bespeak for my Colleagues on our program the same courteous consideration that you have accorded to me.

Let us all enjoy ourselves and then separate with a spirit of gratitude for having renewed old acquaintances, having made new friends, and having done faithful service for our cause. Thank you.

*Read before the Joint Session of the North and South Dakota State Medical Associations, Aberdeen, South Dakota, June 2-3-4, 1931.



DISTRICT AND COUNTY ROSTER

CASS COUNTY MEDICAL SOCIETY, YEAR 1931

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Nichols, W. C. Fargo

Ofstedal, Arne (Deceased) Fargo

Ofstedal, Axel Fargo

Ofstedal, Trygve Fargo

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Stolinsky, A. Sheldon

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Watson, E. M. Fargo

Weible, R. E. Fargo

Winn, W. R. Fargo

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Fawcett, W. C. Starkweather

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McLean, Neil Devils Lake

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Roberts, F. J. Hot Springs, S. D.

Sedlacek, B. B. Fort Totten

Sihler, W. F. Devils Lake

Smith, C. Devils Lake

Stickelberger, Josephine Oberon

Verret, B. D. Rolla

Vigeland, J. G. Brinsmade

Widmeyer, J. P. Rolla

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Deason, F. W. Grafton

Eggers, Aug. Grand Forks

Engstad, J. E. Grand Forks

Field, A. B. Forest River

Flaten, A. N. Edinburg

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Gertson, G. D. Grand Forks

Gislason, G. J. Grand Forks

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Glaspel, G. W. Grafton

Grassick, James Grand Forks

Haagenon, E. C. Grand Forks

Halldorson, M. D. Winnipeg

Hamilton, J. S. Bathgate

Hardy, N. A. Minto

Healy, H. H. Grand Forks

Hetherington, J. E. Grand Forks

Irvine, V. S. Park River

Klein, A. L. Crystal

Landry, L. H. Walhalla

Law, H. W. F. Grand Forks

Leigh, R. E. Grand Forks

Liebeler, W. A. Grand Forks

Lommen, C. E. Fordville

McQueen, W. W. Langdon

Mahon, Ruth M. Grand Forks

Miller, J. P. Grand Forks

Moore, J. H. Grand Forks

Mulder, J. L. Cavalier

Mulligan, T. Grand Forks

O'Keefe, Henry Grand Forks

Panek, A. F. Milton

Peake, Margaret F. Grand Forks

Porter, W. H. Calvin

Quale, V. S. Grand Forks

Ruud, H. O. Grand Forks

Ruud, M. B. Grand Forks

Rystad, H. O. Grand Forks

Smith, J. C. Thompson

Stromberg, G. E. Langdon

Thompson, A. Y. Larimore

Thorgrimsen, G. G. Grand Forks

Tompkins, C. R. Grafton

Wagar, W. D. Michigan

Waldren, G. R. Pembina

Waldren, H. M., Sr. Drayton

Waldren, H. M., Jr. Drayton

Weed, F. E. Park River

Williamson, G. M. Grand Forks

Witherstone, W. H. Grand Forks

Woutat, H. G. Grand Forks

Wylie, A. R. T. Grafton

SIXTH DISTRICT MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Diven, W. L.....Bismarck

SECRETARY-TREASURER
Larson, L. W.....Bismarck

Arnson, J. O.....Bismarck
Aylen, W. C.....Auburn, Wash.
Baer, DeWitt.....Steele
Benson, O. T.....Glen Ullin
Berg, H. M.....Bismarck
Bodenstab, W. H.....Bismarck
Brandes, H. A.....Bismarck
Brandt, A. M.....Bismarck
Buckingham, F. W.....Bismarck
Bunting, F. E.....Mandan
Constans, G. M.....Bismarck
Diven, W. L.....Bismarck
Eastman, L. G.....Hazen
Fisher, A. M.....Bismarck
Fredericks, L. H.....Bismarck

Freise, P. W.....Bismarck
Gaebe, O. C.....New Salem
Gordon, W. L.....Washburn
Graber, R. E.....Bismarck
Griebenow, F. F.....Bismarck
Hamilton, E. E.....New Leipzig
Heinzroth, George.....Turtle Lake
Henderson, R. W.....Bismarck
Hogue, R. R.....Linton
Hoskins, J. H.....Bismarck
LaRose, V. J.....Bismarck
Larson, E. J.....Underwood
Larson, L. W.....Bismarck
Leavitt, R. H.....Carson
Lipp, G. R.....Bismarck
Lodge, L. B.....Steele
Monteith, George.....Hazelton
Nelson, J. M.....Hebron
Nickerson, B. S.....Mandan
Owens, P. L.....Bismarck
Pierce, W. B.....Bismarck

Quain, E. P.....Bismarck
Quain, F. D.....Bismarck
Ramstad, N. O.....Bismarck
Rasmussen, F. P.....Beulah
Rice, R. F.....Solen
Roan, M. W.....Bismarck
Schoregge, C. W.....Bismarck
Smith, C. C.....Mandan
Smith, L. G.....Mandan
Spielman, G. H.....Mandan
Stackhouse, C. E.....Bismarck
Stein, R. J.....New Salem
Strauss, F. G.....Bismarck
Thelen, W. P.....Wilton
Thompson, R. C.....Wilton
Vonnegut, F. F.....Hague
Waldschmidt, R. H.....Bismarck
Weyrens, P. J.....Hebron
Whittemore, A. A.....Bismarck
Wolverton, W. C.....Linton

SOUTHWESTERN DISTRICT MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Lemieux, D.....New England

SECRETARY-TREASURER
Spear, A. E.....Dickinson

Bowen, Jesse W.....Dickinson
Bradley, W. C.....Beach
Chernausek, S.....Dickinson
Cornelius, F. J.....Bowman
Dach, J. L.....Reeder
Dahl, P. K.....Belfield

Gumper, J. D.....Belfield
Gilsdorf, Walter H.....Dickinson
Hetzler, A. E.....Richardton
Hill, S. W.....Regent
Lang, Francis F.....Hettinger
Law, I. M.....Halliday
Lyons, M. W.....Sentinel Butte
Lemieux, D.....New England
Maercklein, O. C.....Mott
Murray, K. M.....Scranton
Nachtwcy, A. P.....Dickinson
Neville, J. V.....Dickinson

Olesky, E.....Mott
Patterson, Stanley.....Rhame
Perkins, G. A.....Dickinson
Radl, R. B.....Dickinson
Rogers, R. W.....Dickinson
Schumacher, N. W.....Hettinger
Smith, Oscar M.....Killdeer
Spear, A. E.....Dickinson
Voss, Carl.....Hettinger
Wendell, W. C.....Marmarth

STUTSMAN COUNTY MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Carr, J. D.....Jamestown

SECRETARY-TREASURER
DePuy, T. L.....Jamestown
Arzt, P. G.....Jamestown
Buzzell, C. P.....Cleveland
Conrad, J. L.....Jamestown

Carpenter, G. S.....Jamestown
Carr, J. D.....Jamestown
Culbert, M. H.....Courtenay
DePuy, T. L.....Jamestown
Gerrish, W. A.....Jamestown
Holt, G. H.....Jamestown
Melzer, S. W.....Woodworth
Lang, A. A. J.....Jamestown

Longstreth, W. E.....Kensal
Ostfield, J. R.....Jamestown
Peake, F.....Jamestown
Sorkness, Joseph.....Jamestown
Wink, Helen.....Jamestown
Wood, W. W.....Jamestown
Woodward, F. O.....Jamestown
Winn, F. C.....Jamestown

TRI-COUNTY MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Hammargren, A. F.....Harvey

SECRETARY-TREASURER
Seibel, J. J.....Harvey
Alger, L.....McCluskey
Boyum, P. A.....Harvey

Crawford, John.....New Rockford
Critchfield, R. J.....Fessenden
Donker, A. E.....Carrington
Goss, E. L.....Belcourt
Hammargren, A. F.....Harvey
MacKenzie, J. R.....New Rockford

MacLachlan, Chas.....San Haven
Meadows, R. W.....Carrington
Matthaei, D. W.....Fessenden
Matthaei, Pearl V.....Fessenden
Seibel, J. J.....Harvey
Van de Erve, H.....Carrington

KOTANA MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Craven, J. P.....Williston
SECRETARY-TREASURER
AbPlanalp, Ira S.....Williston

AbPlanalp, Ira S.....Williston
Allen, Walter C.....Auburn, Wash.
Craven, J. P.....Williston
Dochterman, L. B.....Williston

Johnson, P. O. C.....Watford City
Jones, C. S.....Williston
Skovholt, H. T.....Williston
Wright, W. A.....Williston

NORTHWESTERN DISTRICT MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Grangaard, H. O.....Ryder

SECRETARY-TREASURER
Pence, J. R.....Minot

Blatherwick, W. E.....Van Hook
Bascom, K. F.....Minot
Cameron, A. L.....Minot
Carr, A. A.....Minot
Carr, A. M.....Minot
Christie, F. J.....Deering
Craie, O. S.....Towner
Dalager, N. O.....Anamoose
Devine, J. L.....Minot
Durnin, Charles.....Westhope
Durnin, G. A.....Bottineau
Erenfeld, H. M.....Minot
Fardy, M. J.....Minot
Flath, A. A.....Stanley
Flath, M. G.....Stanley
Fowlie, J. A.....Minot
Frogner, G. S.....Parshall

Gates, Russell.....Minot
Goodman, Robert.....Powers Lake
Grangaard, H. O.....Ryder
Green, E. E.....Westhope
Grieve, H. G.....Minot
Halliday, D. J.....Kenmare
Halverson, H. L.....Minot
Hanson, G. C.....Minot
Haraldson, O. A.....Minot
Hillis, S. J.....Berthold
Hood, C. E.....Lansford
Hurd, F. D.....Tolley
Jensen, A. F.....Rugby
Johns, S. M.....Velda
Johnson, J. A.....Bottineau
Kermott, L. H.....Minot
Knapp, H. G.....Minot
Kolb, F. K.....Granville
Leedahl, O. S.....Stanley
McCannel, A. D.....Minot
McGuire, F. A.....Kenmare
MacKay, A. R.....Bottineau
Moffatt, George.....Crosby

Moreland, A. W.....Carpio
Nelson, L. F.....Bottineau
Newlove, J. T.....Minot
O'Reilly, B. C.....Minot
Owenson, H. A.....Minot
Parker, R. M.....Portal
Pence, J. R.....Minot
Pence, R. W.....Minot
Pierce, A. E.....Minot
Ransom, E. M.....Minot
Rasmussen, R. C.....Drake
Ray, R. H.....Garrison
Rollefson, C. J.....Crosby
Rollie, C. O.....Drake
Rowe, P. H.....Minot
Smith, J. A.....Noonan
Sorenson, A. R.....Minot
Steeves, E. O.....Rugby
Timm, J. F.....Makoti
Welker, A. J.....Max
Wheelon, F. E.....Minot
Yeomans, T. N.....Minot

RICHLAND COUNTY MEDICAL SOCIETY, YEAR 1931

PRESIDENT
O'Brien, T. A.....Wahpeton

SECRETARY-TREASURER
Olson, C. T.....Wyndmere

Beithon, E. J.....Hankinson
Greenman, N. H.....Fairmount
Ivers, M. U.....Christine
Jacobs, George C.....Wahpeton
King, W. W.....Milnor

O'Brien, T. A.....Wahpeton
Olson, C. T.....Wyndmere
Ryan, D. E.....Hankinson
Sasse, E. G.....Lidgerwood
Thompson, A. M.....Abercrombie

SHEYENNE VALLEY MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Pray, Edgar A.....Valley City

SECRETARY-TREASURER
Moore, Will H.....Valley City

Almklov, L. A.....Cooperstown
Brown, Fred.....Valley City

Campbell, W. A.....Valley City
Crosby, E. B.....Valley City
Kellogg, P. M.....Rogers
LeBien, E. A.....McHenry
Macdonald, A. C.....Valley City
Macdonald, A. W.....Valley City
Meredith, C. J.....Valley City
Moore, Will H.....Valley City

Platou, C. A.....Valley City
Pray, E. A.....Valley City
Truscott, J. R.....Binford
VanHouten, J. A.....Valley City
Wanner, W. B.....Wimbledon
Westley, M. D.....Cooperstown
Wicks, Fred L.....Valley City
Zimmerman, S. A.....Valley City

SOUTHERN DISTRICT MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Gundermann, H. R.....Monango

SECRETARY-TREASURER
Fergusson, F. W.....Kulm

Fergusson, F. W.....Kulm

Grant, George.....Wishek
Greene, L. B.....Edgeley
Gundermann, H. R.....Monango
Hubbard, F. G.....Cogswell
Lynde, Roy.....Ellendale
Lyle, W. D.....Havana

Merrett, J. P.....Marion
Meunier, H. J.....Oakes
Ribble, George.....LaMoure
Scanlan, J. E.....Edgeley
VanHouten, R. A.....Oakes

TRAILL-STEELE COUNTY MEDICAL SOCIETY, YEAR 1931

PRESIDENT
Little, R. C.....Mayville

SECRETARY-TREASURER
Vinje, Syver.....Hillsboro

Bowman, L. J.....Shelly, Minn.
Cuthbert, W. H.....Hillsboro
Glasscock, T. J.....Hawarden, Ia.
Gibbons, J. M.....Finley
Hjelle, C. A.....Portland
Kjelland, A. A.....Hatton

Knutson, O. A.....Buxton
Little, R. C.....Mayville
Odegard, Bernt.....Mayville
Savre, M. T.....Northwood
Vinje, Syver.....Hillsboro

ALPHABETICAL ROSTER

AbPlanalp, Ira S.	Williston	Durnin, Charles	Westhope	Hill, S. W.	Regent
Alger, L. J.	McClusky	Durnin, G. A.	Bottineau	Hillis, S. J.	Berthold
Allen, Robert W.	Bismarck	Eastman, L. G.	Hazen	Hjelle, Carl A.	Portland
Almklov, L.	Cooperstown	Eggers, August S.	Grand Forks	Hogue, R. R.	Linton
Arneberg, J. G.	Minneapolis	Elofson, Carl E.	Fargo	Holt, George H.	Jamestown
Arneson, A. O.	McVile	Emert, H. F.	Sarles	Hood, C. E.	Lansford
Arnson, J. O.	Bismarck	Engesather, J. A. D.	Brocket	Horsinan, A. T.	Devils Lake
Arzt, Philip G.	Jamestown	Engstad, J. E.	Grand Forks	Hoskins, J. H.	Bismarck
Aylen, James Prentiss	Fargo	Erenfeld, Harris M.	Minot	Hotchkiss, W. M.	Fargo
Aylen, Walter C.	Auburn, Wash.	Evans, Lester J.	New York, N. Y.	Hubbard, F. G.	Cogswell
Baer, DeWitt	Steele	Fardy, Martin J.	Minot	Huntley, H. B.	Leonard
Baillie, W. F.	Fargo	Fawcett, J. C.	Starkweather	Hurd, F. D.	Tolley
Bakke, H.	Lisbon	Fawcett, W. C.	Starkweather	Irvine, Vincent S.	Park River
Bascom, K. F.	Minot	Fergusson, F. W.	Kulm	Ivers, M. U.	Christine
Beck, R. Hudson	Lakota	Field, A. B.	Forest River	Jacobs, George C.	Wahpeton
Beithon, E. J.	Hankinson	Fisher, Albert M.	Bismarck	James, J. B.	Page
Bennett, C. E.	Aneta	Fjelde, J. H.	Fargo	Jelstrup, Christian	Kindred
Benson, O. T.	Glen Ullin	Flaten, A. A.	Edinburg	Jensen, August F.	Rugby
Bentzen, Olaf	Grand Forks	Flath, A.	Stanley	Johns, Stephen M.	Velva
Berg, H. M.	Bismarck	Flath, M. G.	Stanley	Johnson, J. A.	Bottineau
Blair, A. K.	Minnewaukan	Floew, Arnt T.	Fargo	Johnson, P. O. C.	Watford City
Blatherwick, W. E.	Van Hook	Fowlie, John A.	Minot	Joistad, A. H.	Fargo
Bodenstab, W. H.	Bismarck	Fredericks, L. H.	Bismarck	Jones, Carlos S.	Williston
Bowen, J. W.	Dickinson	French, H. E.	Grand Forks	Kaess, A. J.	Fargo
Bowman, L. J.	Shelly, Minn.	Friese, P. W.	Bismarck	Kellogg, Paul M.	Rogers
Boyum, P. A.	Harvey	Frogner, G. S.	Parshall	Kermott, Louis H.	Minot
Bradley, W. C.	Beach	Gaebe, O. C.	New Salem	Kilbourne, B. K.	Fargo
Brandes, H. A.	Bismarck	Gates, Russell	Minot	King, W. W.	Milnor
Brandt, Albert M.	Bismarck	Gerrish, W. A.	Jamestown	Kjelland, A. A.	Hatton
Bray, R. B.	Fargo	Gerton, G. D.	Grand Forks	Klein, A. L.	Crystal
Brown, Fred	Valley City	Gibbons, J. M.	Finley	Knapp, Henry G.	Minot
Brown, W. G.	Fargo	Gilsdorf, Walter H.	Dickinson	Knudtson, H. M.	Fargo
Buckingham, F. W.	Bismarck	Gislason, G. J.	Grand Forks	Knutson, O. A.	Buxton
Bunting, Frank E.	Mandan	Glaspel, C. J.	Grafton	Kolb, F. K.	Granville
Burton, Paul H.	Fargo	Glaspel, G. W.	Grafton	Lancaster, W. E. G.	Fargo
Buzzell, Charles P.	Cleveland	Glasscock, T. J.	Hawarden, Ia.	Lancaster, W. M.	Wahpeton
Call, A. M.	Rugby	Goodman, Robert	Powers Lake	Landry, L. H.	Walhalla
Cameron, A. L.	Minot	Gordon, W. L.	Washburn	Lang, A. A. J.	Jamestown
Campbell, William	Valley City	Goss, Edwin Lincoln	Belcourt	Lang, Francis F.	Hettinger
Campbell, R. D.	Grand Forks	Gowenlock, H. J.	Gardner	LaRose, Victor J.	Bismarck
Carpenter, G. A.	Fargo	Graber, R. E.	Bismarck	Larson, C. B.	Fargo
Carpenter, G. S.	Jamestown	Graham, J. D.	Devils Lake	Larson, E. J.	Underwood
Carr, A.	Minot	Grangaard, Henry O.	Ryder	Larson, G. A.	Fargo
Carr, Andy M.	Minot	Grant, George	Wishek	Larson, Leonard W.	Bismarck
Carr, John D.	Jamestown	Grasick, James	Grand Forks	Laugeson, L. L.	Cando
Chernauek, S.	Dickinson	Greene, E. E.	Westhope	Law, H. W. F.	Grand Forks
Christie, F. John	Deering	Greene, Lee B.	Edgeley	Law, I. M.	Halliday
Clark, I. D.	Fargo	Greenman, N. H.	Fairmount	Leavitt, R. H.	Carson
Clay, Albert James	Fargo	Griebenow, Frederick	Bismarck	LeBien, E. A.	McHenry
Conrad, J. L.	Jamestown	Grieve, H. G.	Minot	Leedahl, O. S.	Stanley
Constans, Geo. M.	Bismarck	Gundermann, H. B.	Monango	Leigh, R. E.	Grand Forks
Cornelius, F. J.	Bowman	Gumper, J. B.	Belfield	Lees, H. D.	Minneapolis
Countryman, John E.	Grafton	Haagenon, E. C.	Grand Forks	Lemieux, D.	New England
Craise, O. S.	Towner	Hallderson, M. B.	Winnipeg	Lewis, T. H.	Fargo
Craven, J. P.	Williston	Halliday, D. J.	Kenmare	Liebeler, W. A.	Grand Forks
Crawford, John	New Rockford	Halverson, Henry L.	Minot	Limburg, A. M.	Fargo
Critchfield, R. J.	Fessenden	Hamilton, E. Everett	New Leipzig	Lipp, G. R.	Bismarck
Crosby, E. B.	Valley City	Hamilton, J. S.	Bathgate	Little, R. C.	Mayville
Culbert, M. H.	Courtenay	Hammargren, A. F.	Harvey	Lodge, F. D.	Steele
Cuthbert, William H.	Hillsboro	Hanna, J. F.	Fargo	Lommen, C. E.	Fordville
Dach, John L.	Reeder	Hanson, Geo. C.	Minot	Longstreth, W. E.	Kensal
Dahl, P. K.	Belfield	Haraldson, O.	Minot	Long, W. H.	Fargo
Dalager, N. O.	Anamoose	Hardy, N. A.	Minto	Lund, A. B.	Leeds
Darrow, Frank I.	Fargo	Haugen, H.	Fargo	Lyle, W. D.	Havana
Darrow, Kent Edward	Fargo	Hayhurst, J. O.	Rolette	Lynde, Roy	Ellendale
Deason, Frank W.	Grafton	Haynes, G. H.	Lisbon	Lyons, W. M.	Sentinel Butte
DePuy, T. L.	Jamestown	Healy, H. H.	Grand Forks	McCannel, A. D.	Minot
Devine, J. L.	Minot	Heimark, A. J.	Fargo	McGuire, F. A.	Kenmare
Dillon, J. G.	Fargo	Heinzroth, G. E.	Turtle Lake	McGurren, C. J.	Devils Lake
Diven, W. L.	Bismarck	Henderson, R. W.	Bismarck	McIntosh, J. L.	Devils Lake
Dochterman, L. B.	Williston	Hendrickson, G.	Enderlin	MacGregor, M.	Fargo
Donker, Adrian E.	Carrington	Hetzler, A. E.	Richardton	MacKay, A. R.	Bottineau
Drew, G. F.	Devils Lake	Hetherington, J. E.	Grand Forks	MacKenzie, J. R.	New Rockford

MacLachlan, Chas.....San Haven
 McLean, Neil.....Devils Lake
 McQueen, W. W.....Langdon
 Macdonald, A. C.....Valley City
 Macdonald, A. W.....Valley City
 Maercklein, O. C.....Mott
 Mahon, Ruth M.....Grand Forks
 Matthaei, D. W.....Fessenden
 Matthaei, Pearl V.....Fessenden
 Meadows, R. W.....Carrington
 Melzer, S. W.....Woodworth
 Meredith, C. J.....Valley City
 Merrett, J. P.....Marion
 Meunier, H. J.....Oakes
 Miller, H. W.....Casselton
 Moffat, George.....Crosby
 Miller, J. P.....Grand Forks
 Monteith, G.Hazelton
 Moore, J. H.....Grand Forks
 Moore, Will H.....Valley City
 Moreland, J. W.....Carpio
 Morris, A. C.....Fargo
 Mulder, J. L.....Cavalier
 Mulligan, T.....Grand Forks
 Murray, K. M.....Scranton
 Nachtwey, A. P.....Dickinson
 Nelson, J. M.....Hebron
 Nelson, L. F.....Bottineau
 Neville, J. V.....Dickinson
 Newlove, J. T.....Minot
 Nichols, A. A.....Fargo
 Nichols, W. C.....Fargo
 Nicholson, E. G.....Lawton
 Nickerson, B. S.....Mandan
 O'Brien, T.....Wahpeton
 Odegaard, B.....Northwood
 Oftedal, Arne (Deceased).....Fargo
 Oftedal, Axel.....Fargo
 Oftedal, Trygve.....Fargo
 O'Keefe, H.Grand Forks
 Olesky, E.Mott
 Olson, C. T.....Wyndmere
 O'Reilly, V. C.....Minot
 Ostfield, J. R.....Jamestown
 Owens, P. L.....Bismarck
 Owenson, H. A.....Minot
 Panek, A. F.....Milton
 Parker, R. M.....Portal
 Patterson, S.Rhame
 Patterson, T. C.....Lisbon
 Peake, F.Jamestown
 Peake, Margaret F.....Grand Forks
 Pence, J. R.....Minot
 Pence, R. W.*.....Minot

*Honorary

Perkins, G. A.....Dickinson
 Pierce, A. E.....Minot
 Pierce, W. B.....Bismarck
 Platou, C. A.....Valley City
 Porter, W. H.....Calvin
 Pray, E. A.....Valley City
 Pray, R. E.....Fargo
 Quain, E. P.....Bismarck
 Quain, Fannie Dunn.....Bismarck
 Quale, V. S.....Grand Forks
 Radl, R. B.....Dickinson
 Ramstad, N. O.....Bismarck
 Ransom, E. M.....Minot
 Rasmussen, F. T.....Beulah
 Rasmussen, R. C.....Drake
 Ray, R. H.....Garrison
 Ribble, George.....LaMoure
 Rice, P. F.....Solon
 Richter, E. H.....Hunter
 Rindlaub, Eliz't.....Pasadena, Calif.
 Roan, M. W.....Bismarck
 Roberts, F. J.....Hot Springs, S. D.
 Rodgers, R. W.....Dickinson
 Rollefson, C. J.....Crosby
 Rollie, C. O.....Drake
 Rostel, Hugo.....Fargo
 Rothnem, T. P.....Fargo
 *Rowe, H. J.....Minneapolis
 Rowe, P. H.....Minot
 Ruud, H. O.....Grand Forks
 Ruud, M. B.....Grand Forks
 Ryan, D. E.....Hankinson
 Rystad, O. H.....Grand Forks
 Sand, Olaf.....Fargo
 Sasse, E. G.....Lidgerwood
 Savre, M. T.....Northwood
 Scanlan, J. E.....Edgeley
 Schoregge, C. W.....Bismarck
 Schumacher, N. W.....Hettinger
 Sedlacek, B. B.....Fort Totten
 Seibel, J. J.....Harvey
 Sihler, W. F.....Devils Lake
 Skelsey, A. W.....Fargo
 Skovholt, H. T.....Williston
 Smith, C. C.....Mandan
 Smith, C.....Devils Lake
 Smith, J. A.....Noonan
 Smith, J. C.....Thompson
 Smith, LeRoy G.....Mandan
 Smith, O.Killdeer
 Sorenson, A. R.....Minot
 Sorkness, Joseph.....Jamestown
 Spear, A. E.....Dickinson
 Spielman, G. H.....Mandan
 Stackhouse, C. E.....Bismarck

Steeves, E. O.....Rugby
 Stein, R. J.....New Salem
 Stickelberger, Josephine S.....Oberon
 Stolinsky, A.Sheldon
 Strauss, F. B.....Bismarck
 Stromberg, G. E.....Langdon
 Swanson, J. C.....Fargo
 Tainter, Rolfe.....Fargo
 Thane, B.Wahpeton
 Thelen, W. P.....Wilton
 Thompson, A. M.....Abercrombie
 Thompson, A. Y.....Larimore
 Thompson, R. C.....Wilton
 Thorgrimsen, G. G.....Grand Forks
 Timm, J. F.....Makoti
 Tompkins, C. R.....Grafton
 Tronnes, Nels.....Fargo
 Truscott, J. R.....Binford
 Van de Erve, S. H.....Carrington
 VanHouten, J.....Valley City
 VanHouten, R.Oakes
 Verret, D. D.....Rolla
 Vigeland, J. G.....Brinsmade
 Vinje, Syver.....Hillsboro
 Vonnegut, F. F.....Hague
 Voss, Carl.....Hettinger
 Wagar, W. D.....Michigan
 Waldren, G. R.....Pembina
 Waldren, H. M., Sr.....Drayton
 Waldren, H. M., Jr.....Drayton
 Waldschmidt, R. H.....Bismarck
 Wanner, W. B.....Wimbledon
 Watson, E. M.....Fargo
 Weed, F. E.....Park River
 Weible, R. E.....Fargo
 Welker, A. J.....Max
 Wendell, W. G.....Marmarth
 Westley, M. D.....Cooperstown
 Weyrens, P. J.....Hebron
 Wheelon, F. E.....Minot
 Whittemore, A. A.....Bismarck
 Wicks, F. L.....Valley City
 Widmeyer, J. P.....Rolla
 Williamson, G. M.....Grand Forks
 Wink, Helena K.....Jamestown
 Winn, F. C.....Jamestown
 Winn, W. R.....Fargo
 Witherstine, W. H.....Grand Forks
 Wolverton, W. C.....Linton
 Wood, W. W.....Jamestown
 Woodward, F. O.....Jamestown
 Woutat, H. G.....Grand Forks
 Wright, W. A.....Williston
 Wylie, A. R. T.....Grafton
 Yeomans, T. N.....Minot
 Zimmerman, S. A.....Valley City

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The Hennepin County Medical Society

The Minnesota Academy of Medicine
The Soo Railway Surgical Association
The Sioux Valley Medical Association

North Dakota State Health Officers Association

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MINNEAPOLIS, MINN., JULY 15, 1931

DR. SCAMMON'S RETURN TO MINNESOTA

The announcement that Dr. Richard E. Scammon would return to the University of Minnesota after having spent a year as Dean of Biological Sciences in the University of Chicago, has aroused great enthusiasm in the medical profession and scientific circles throughout the Northwest.

Dr. Scammon is today, recognized as a world leader in embryology and child (infant) anatomy and is one of America's outstanding scholars. The science of biometry, that is the mathematical interpretation of biologic material, has recently become an important phase of research. Dr. Scammon has mastered this new field, gaining thereby no small reputation as a mathematician. He is a student of chemistry, physics and, in fact, all the sciences closely allied to medicine. He is a linguist and historian of note.

He was acclaimed as one of the finest teachers in the School of Medicine because his lectures, demonstrations, and laboratory exercises were so practical, and the presentation so clear and adequate. In the Graduate School, the interest that Dr. Scammon has created in research is inestimable. Through his personal encouragement and leadership many a student has gone on to obtain a Master's degree or the degree of Doctor of Philosophy. At times Dr. Scammon has had as many as thirty graduate students working under his direction at once.

One situation can be cited to show Dr. Scammon's great versatility and penetration. A few years ago, when the question of life insurance for faculty members was being discussed, President Coffman appointed Dr. Scammon to inves-



DR. RICHARD E. SCAMMON

tigate the various companies and their policies and to make some recommendations. He became so thoroughly grounded in the subject that not only were his recommendations of the best but his counsel has since been sought frequently by the life insurance companies themselves.

In view of these facts, it is not to be wondered at that Dr. Scammon's acceptance of a deanship in the University of Chicago was a keen disappointment to the local medical and scientific professions and the whole faculty of the University of Minnesota. Although Dr. E. P. Lyon, Dean of the Medical School, and President Coffman were unable to retain him, they immediately

began to work out some plan whereby his return to the University might be made possible. The outcome of their vision for the betterment of the University was expressed in the creation of a new position to be offered to Dr. Scammon. At the meeting of the Board of Regents on May 12, 1931, Dr. Scammon was officially offered this new position, which is briefly described in the report of President Coffman as follows:

"Attention is called especially to the fact that Dr. Scammon is appointed Dean of the Medical Sciences. His deanship is not confined to an administrative jurisdiction; it is concerned primarily with educational programs and relationships rather than with administrative details.

"The arguments for the creation of such a position have been set forth in my recent reports in which I have called attention to the number of pertinent facts; viz., (1) each college is a service college for the other colleges of the University (in the medical science courses, for example, there are more than twice as many students of other colleges of the University as there are students preparing for the practice of medicine); (2) specialists in the various colleges and departments of the University more and more feel the need of and seek assistance of scholars in allied fields (all of which means that the lines between colleges and departments are breaking down here and there); (3) the organization of curricula that provide for the training of professional workers in new fields many times necessitates the use of materials now offered by two or more colleges of the University (for example, the training of men for the wide use of radium calls for the correlation of work now being offered by the Medical School, the Dental School, the School of Chemistry, and the Department of Physics); (4) many of the most significant researches of the future will be made in the overlapping areas between related fields of learning (for example, it is believed colloidal chemistry will make significant contributions to medical science, but colloidal chemistry is a lineal descendant of a marriage between botany and chemistry and it has now advanced to that point where it calls for the co-operation of the doctor of medicine, the botanist, the chemist, the physicist, and the biologist, for its development.)"

J. A. M.

"THE SICK PAY"

During times of economic distress there is always an increase in damage suits against the physician. While there are of course a certain number of suits that are warranted because of accidents that are unavoidable as long as human beings are doing things, it is the duty of every physician to discourage unwarranted suits. The suit may be one which cannot be collected because there is no basis on which it was instituted but the cost of defense in every case is considerable. The cost of awards in warranted suits, and the cost of defense in unwarranted ones are all borne by sick people since almost every physician is carrying malpractice insurance. This insurance becomes a part of his overhead, and consequently a part of the fees which he may collect. Juries in awarding damages should bear in mind that this award will be collected from sick people, and should therefore be reasonable in their awards. If the awards are doubled in one year in any state the insurance premium will double in that state and the amount paid by the sick paying patient for the insurance is, of course, doubled. A certain number of suits that do not have a foundation for a suit are also settled out of court, many times for a nominal sum, since the insurance companies feel that they are doing a service to the sick paying public if this settlement is less than the cost of defense. It stands to reason, however, that the number of these suits might increase to the place where it would be necessary to defend every suit regardless of cost to the very limit of defense in order to discourage the number of people applying for damages without a warranted basis.

The legal profession can be of immense help in this regard. An attorney who has had a number of cases which have been lost should realize that he might have helped to discourage this expense which is borne by sick people out of work because of their illness. The medical profession too probably should tabulate and publish statistics as to the percentage of suits which have failed in order that the public might be informed that the courts do not award damages in every case.

C. W. F.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. Gilbert G. Cottam, formerly in practice in St. Paul, has moved his offices to Minneapolis.

Dr. P. J. Griffin, who has been in practice for several years at Fertile, Minn., has moved to Chicago where he will continue in general practice.

Dr. A. Stolinsky, Sheldon, N. D., was recently married to Miss Rose Meblin of Grand Forks.

Dr. W. G. Brown, Fargo, has been appointed County Physician, with Dr. E. M. Watson as assistant, for Cass County, North Dakota.

Dr. Franklin R. Wright, Minneapolis, recently spoke before the Renville County, Minn., Medical Society on "Genito-Urinary and Venereal Diseases."

Dr. Jacob Van Houten, Valley City, N. D., has been spending several weeks in Chicago, where he has been attending the leading clinics in post graduate work.

About 25 members of the Northwestern District Medical Society held their June meeting at Minot, N. D., when a most enjoyable clinical program was presented.

Dr. T. J. Glasscock, who has been in active practice at Finley, N. D., for many years, has moved to Hawarden, Iowa, where he has a much larger field for practice.

Dr. R. L. O'Brien, who has been located at the Rosebud, S. D., Indian Reservations for past eight years, has decided to open offices for general practice at Phillip, S. D.

Dr. J. R. Westaby, president elect of the South Dakota Medical Society, gave a very interesting talk on Cancer, at a meeting of the Lions Club, recently held at Sioux Falls.

Dr. A. M. Fisher and family of Bismarck, who have been spending the past year in California have returned home and Dr. Fisher has again resumed his medical practice.

Dr. E. T. Lietzke, a recent graduate of the University of Minnesota Medical School, will

open an office for general practice at Olivia, Minn., during the month of August.

Dr. Fred G. Carter, Superintendent of the Ancker Hospital, St. Paul, was elected president of the Minnesota Hospital Association at the annual meeting held at Duluth last month.

The new \$150,000 hospital located at Fort Belknap, Montana, was opened to the public on July 1st, with a capacity of over sixty beds, the largest hospital in that section of the state.

Officers of the Mercer Hospital, at Valley City, N. D., for the ensuing year, are Dr. E. A. Pray, chairman; Dr. S. A. Zimmerman, vice chairman, and Dr. Will H. Moore, secretary and treasurer.

Dr. Roy F. Raiter, Cloquet, Minn., was among the leading speakers at the annual meeting of the surgeons of the Great Northern Railway Company recently held at Glacier National Park, Montana.

Dr. F. W. Cottom, Shelby, Montana, shot himself through the heart, while sitting in his auto on the street of that city. Dr. Cottom was 54 years of age and had been in active practice for the past five years.

Dr. Charles H. Mayo of Rochester, Minn., was elected president of the American Surgical association at the annual meeting recently held in San Francisco. New Haven, Conn., was selected as the meeting place in 1932.

Dr. William Harold Ford, who is a graduate of the University of Minnesota, class of 1931, and who completed his Internship at Ancker Hospital, St. Paul, July 1st, has opened an office in Minneapolis for the general practice of medicine and surgery.

Physicians who have offices at several towns in the Dakotas and move from place to place on schedule during the week are in the category of itinerant physicians and must have itinerant as well as regular physician's licenses, according to an opinion given by the attorney general of North Dakota.

Dr. F. C. Sarazin of Superior, Wis., was elected president of the Great Northern Railway Surgeons' Association at the annual meeting held at Glacier Park on July 1. Duluth was chosen as next year's convention city. Other officers named were Dr. William Conway of Havre, Mont., first vice president; Dr. A. D. MacCannell of Minot, N. D., second vice president; Dr. B. J. Branton

of Willmar, Minn., third vice president and Dr. R. C. Webb of Minneapolis, re-elected secretary-treasurer.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).
SPEAKER: William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month of August will be as follows: August 5th—End Results of the Treatment of Overweight. August 12—Mongolian Idiocy. August 19th—The Liver Treatment of Pernicious Anemia. August 26th—The Occupational Factor in Cancer.

Robert McGraw, 65 years old, Negro quack who formerly practiced at Hewitt and Villard, Minn., was arrested, June 8, at Winsted, charged with violating the Basic Science Law. McGraw had been previously arrested and tried on two occasions before Judge Flaherty of Glenwood, but in each case Flaherty dismissed the case. The state board of medical examiners, when informed that McGraw had located in McLeod County, had him arrested on a complaint filed by Mr. Brist, representing the board. June 11, a second complaint was filed against McGraw because he had agreed to cure a case of Hodgkin's disease within three months. McGraw was brought before Judge Kohler of the municipal court of Glencoe, who set the quack's bail at \$2,000. He was unable to raise this and was confined in the county jail. McGraw pleaded guilty to both charges before Judge C. M. Tift, who imposed a fine of \$225 and costs on the first charge. On the second charge Judge Tift sentenced McGraw to one year in the county jail and suspended the sentence on the condition that McGraw return immediately to Illinois, his native state, and refrain from the practice of healing in Minnesota. The court expressly reserved the right to revoke the suspension of the sentence at any time it saw fit. Judge Tift also warned McGraw against attempting to practice in his own state or anywhere else, unless he was licensed. This brings to a close three years of work on the part of the state board of medical examiners to eliminate a man whom the board describes as one of the most vicious quacks in the state.

MISCELLANEOUS

TO THE MEDICAL PROFESSION OF NORTH DAKOTA:

Again I draw your attention to the fact that your first registration dues must be paid on or before August 1st. Those who fail to register invite suspension or revocation of their license, in fact, forfeit their right to practice in this State—read law as printed on application blank. About fifty per cent were registered July 10th.

It gives me pleasure to have a letter I received from the first president of the State Board of Medical Examiners when the Board was organized in 1890 inserted here.

Copy of letter:

"Bathgate, North Dakota,
July 1, 1931.

Dr. G. M. Williamson,
Grand Forks, N. D.

Dear Doctor:

I am pleased to see that the State Board has at length been provided with adequate funds.

As you know, I was president of the Board during the first four years of its existence when we were so handicapped for funds that I found it necessary to contribute finances to meet printing bills and prosecution costs to the amount of much over \$100.00.

Fraternally,
F. N. Burrows, M. D."

Those who may question the necessity of an annual registration fee can see by this letter what a handicap the Board of Medical Examiners have been working under all these years.

Those who have not registered, do so today.

Signed:

North Dakota State Board of
Medical Examiners.

G. M. Williamson, M. D., Secretary.

STATEMENT REGARDING THE DISCOVERY OF THE DEAFENED PRE-SCHOOL CHILD ISSUED BY THE HEALTH COUNCIL

Population centers in which work is being done for the discovery of deafened pre-school children have been notably fruitful of results. We feel sure that in this respect Minneapolis is not an exception to the general rule. Many such children are discoverable and oftentimes remediable.

We have found, and we have been repeatedly admonished by other observers, that it takes *positive* inquiry to bring out the facts of such deafening in many cases; that parents are often careless themselves in noting the loss of hearing in their young children; and that if they do discover such loss they are frequently inclined to conceal the fact of the existence of such a handicap.

They are apt to think, too, that nothing can be done about it, when as a matter of fact very much can be done in these early years, when body and mind are still in the making; when the consequences of the diseases which cause deafening are most readily overcome by the otologist; when hearing and voice can be most readily trained; when lip-reading can be very easily taught to the young child and even by the interested mother.

We have already invited your coöperation in a joint effort being made by The Health Council, the Minneapolis League for the Hard of Hearing, and the Health and Social Agencies of the City, to find and to help these deafened little ones who, left alone, will in a very large majority of cases, grow worse and will lay the foundation in childhood years for the development of adult deafness in days to come.

Will you not give us welcome further aid in this discovery, by teaching your health and relief workers the technique of search in the home, the family, the day and the nursery schools and the kindergarten? Will you not promptly advise the Executive Secretary of the Minneapolis League for the Hard of Hearing, in the Plaza Hotel, of your findings? She will do the rest, with the help of her co-workers, and the otologists, lip-readers and voice culturists. The results will be the relief of the young deafened children of today; the carrying forward of the retarded children of the present and of the future; the saving of hearing impairment and its limitations among the adults of the near future.

Physicians, public health nurses, and teachers are also invited to aid by the reference of any such deafened children of pre-school age, who may be guided to the care of the otologist, and to the lip-reading teacher, and to the voice-trainer.

CLASSIFIED ADVERTISEMENTS

For Rent

Doctor's office occupied by prominent physician. Office elegantly equipped. Individual treatment room, laboratory, etc. Reception room is shared with dentist and other physician. A new up-to-the-minute medical building, located in one of the best

business intersections of good residential district. This is an unusual proposition and must be seen to be fully appreciated. Address Box 837, care of this office.

Wanted for Locum Tenens

Wanted to do locum tenens for about three months. Must be able to speak and understand the Scandinavian language. Rural community in Southern Minnesota. Address box 840, care of this office.

For Sale or Lease

General practice for sale or lease in southeastern North Dakota, County seat. Unopposed, large territory, good crops and roads. Well established. Specializing. Open after July 1st. Reasonable terms. Address box 841, care of this office.

Position Wanted

Experienced technician would like position in Clinic or physician's office as laboratory technician or office assistant or both. Good references. Address Mrs. Lillian Flindt, Route No. 1, c-o R. K. Mattice, Minneapolis, Minn.

Wanted to Buy for Cash

Used equipment, in good condition for a 20-bed hospital. Including beds, tables, operating tables, sterilizers, etc. Itemize what you have, giving prices on whole or part. Address box 843, care of this office.

Position Wanted

Would like position as secretary in physician's office, clinic or hospital. Capable stenographer. Good references. Address box 844, care of this office.

Location Wanted

Physician, 25 years experience, seeks office association with an established physician or surgeon practicing in Minneapolis. Address Box 845, care of this office.

For Sale

My entire M. D. office equipment, includes full line of instruments, operating tables, etc., and extensive library complete and up to date. Will sell at a big discount and give good terms. Wonderful opening for a good young doctor. Address box 846, care of this office.

Location Desired

Young physician desires location. Address Box 849, care of this office.

Wanted

Young, single Protestant man who has had internship, to help in general practice and private Hospital in Southern Minnesota. \$175.00 per month to start, including room and board in Hospital free. Everything furnished. Address Box 847, care of this office.

For Sale

Diathermy Fisher, as good as new, costs \$650.00, will take \$300.00. Basal Metabolometer, nearly new, costs \$190.00, will take \$100.00. Both these instruments will be crated F. O. B. my town in South Dakota. First come, first served. Address Box 848, care of this office.

For Rent

Desirable office space in brand new modern building on busy business and street car intersection in South Minneapolis. Waiting room is shared by busy dentist, established seven years on corner. Doctors' offices are occupied at present, but owing to other appointments they will be available for rent August 1st. Long lease. Office is equipped. Rent reasonable. Competition light. For information address Box 850, care of this office.

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THE CLASSIFICATION AND MANAGEMENT OF ANEMIA*

BY JAMES B. CAREY, M.D.

MINNEAPOLIS, MINNESOTA

In most recent attempts at classification of anemia, various authors have either catalogued the clinical entities with which anemia might be associated, or grouped those anemias of known causation together and devoted their attention to the so-called cryptogenetic anemias of supposed secondary type. The result has been some confusion. By classification, something more than simple listing of probable causes should be done, because when such a list is completed, it is found that there are many anemias which have not been included. These so-called cryptogenetic anemias are not really very different as far as the anemia itself is concerned from the type of anemia occurring with well recognized clinical entities, although they may differ in degree or characteristics.

There are in the main three mechanisms concerned in the production of any anemia:

- (1) Hemorrhage, either sudden, single, and massive, or repeated, large or small, at frequent or infrequent intervals, or continuous minute leakage.
- (2) Diminished production of blood elements in the hematopoietic tissue, or impaired delivery (maturation) from the hematopoietic tissue.
- (3) Destruction of blood (hemolysis).

In some conditions hydremia or dilution may be noticeable, but as a secondary factor only, and not to be considered as a direct mechanism in the production of an anemic state. Any anemia, then, whether it be considered as primary (so-called pernicious anemia or aplastic anemia), or secondary, must be produced by one of these three mechanisms, operating singly or in combination. Approaching the problem then from the standpoint of the effect of these mechanisms on the blood itself, one may find his ideas of classification, especially with reference to management, clarified.

For instance, in constant minute or small hemorrhage it is apparent from the study of the blood itself that the hematopoietic tissue is becoming exhausted, falling behind on production of new elements to replace the loss. In other instances it is evident that in a condition primarily of deficiency of manufacture (aplastic type) a hemorrhage may act temporarily at least as a stimulant or as an exhaustive factor sufficient to place the individual definitely in the aplastic class.

In pernicious anemia, for instance, recent work has shown that in addition to the hemolysis which obviously occurs, there is also an added factor of delayed delivery of elements from the blood forming tissue, there being actually no deficiency in blood formation, for the bone marrow always shows hyperactivity. But also in pernicious anemia it is known that, due to the long continued

*Read before the Aberdeen District Medical Society, February 20, 1931.

hemolytic factor, the bone marrow finally often becomes exhausted, aplastic, and then no amount of stimulation by liver or anything will produce increased delivery of cells. It is not necessary here to go into the causes of the excessive destruction of cells on the one hand, or of faulty maturation on the other. That these causes lie in some deficiency of gastric secretion is implied by the recent work of Castle.

Infection may operate in an individual to produce toxic destruction or hemolysis of blood, or it may effect the bone marrow in such a way as to render it aplastic. Nutritional disturbances of various sorts may be responsible for types of anemia caused by deficiency of hemoglobin synthesis or red blood cell manufacture. Hence it may be seen that all types of anemia may be encountered, depending upon the operative mechanisms, and not necessarily upon the etiologic cause. Clinically, anemic states may range from the effect of a single massive hemorrhage to that of hemolytic icterus. In any clinical entity, furthermore, any combination of mechanisms may be possible. Chronic, slow, exhaustive hemorrhage from the gastro-intestinal tract, pelvis or kidney may appear at first as a simple depletion anemia, but finally change into the picture of aplasia of bone marrow. Pregnancy may produce a simple anemia due to physiologic causes or need of the growing fetus; or because toxins cause a bone marrow deficiency type; or a hemolytic type. Achlorhydria is often accompanied by an anemia indicating a bone marrow inactivity which may be simply because of nutritional deficiency, or some more obscure reason. Indeed Witt's analysis of fifty of these cases indicates some rather close relation to pernicious anemia, although the anemia itself has entirely different characteristics. There is also the so-called Plummer-Vinson syndrome of anorexia, low basal metabolic rate, occasionally achylia and an anemia very much like that described by Witt and Castle, all of which are deficiency anemias, probably upon a faulty nutritional basis.

The most marked type of hemolytic anemia is, of course, that seen in hemolytic icterus.

As to the data to be found in the blood itself and which are useful in evaluating the mechanism producing the anemia, several are available, namely, the total red count in relation to the hemoglobin content (color index); the reticulocyte count and the leucocyte count; the size of the red blood count and the neutrophilic shift to right or left may all be easily determined. These data serve very well as indications of bone marrow activity, delivery of cells, and hemoglobin

synthesis. As examples, a low reticulocyte count, a normal index and a low white count, together with tendency for cells to be small (microcytic), would indicate a poor state of bone marrow function. Normal counts of all the formed elements, but a low hemoglobin percentage, and hence a low color index, would mean a chlorotic type of anemia, a hemoglobin deficiency type. An increase of reticulocyte count, together with an increase in leucocytes and the appearance of macrocyte or nucleated red cells, are all indicative of good erythroblastic response; while a low reticulocyte count, leukopenia, low total red count with, however, a good proportion of large cells and good hemoglobin percentage would indicate a condition of delayed maturation. Hemolytic or destructive anemias are characterized by the finding of the products of red cell breakdown in the urine, feces, and blood serum. Therefore, for the classification of any anemic condition for the purpose of management, color index, white blood count, reticulocyte count, estimation of size of red cells, bile pigments in urine, and blood serum bile index are the essential data to have at hand.

With these facts discovered, and the mechanism producing the anemia decided upon, search may be more logically and accurately made for the underlying etiologic factor, and it will be surprising how few cases will have to be relegated to the waste basket "cryptogenetic." Hemorrhage from any source such as malignancy, polypi, parasites; chronic nutritional disturbances associated with faulty diet, diabetes, nephritis, tuberculosis; poisonings (as lead, aniline dyes, etc.); achlorhydria, infection, may all be discovered to operate in any of the three ways outlined.

As a summary, a classification would appear as follows:

1. Hemorrhagic anemia, acute or chronic hemorrhage as cause, from ulcer, polypi, hemorrhoids, parasites, fibromata, malignancy, renal tumors, etc.
2. Deficient red blood cell or hemoglobin production or maturation as seen in (a) pellagra, parasites, infection, toxins, poisons, pregnancy, achlorhydria, myxedema, nephritis, carcinoma, most causes operating directly or indirectly upon a nutritional basis, with some exceptions; (b) definite aplastic anemias from any of the above causes; (c) primary aplastic anemia.
3. Destructive or hemolytic, often due to (a) infection, pregnancy, poisons, toxins, etc., or, (b) familial or acquired hemolytic icterus.
4. Mixed types as (a) pernicious anemia (deficient maturation plus hemolysis); and other

combinations as (b) chronic bleeding plus exhaustion aplasia; (c) aplastic tendency plus hemorrhage; (d) hemolytic types progressing to exhaustive aplasia.

It will be apparent from the above that a proper classification will often depend upon the stage in the progress of the anemia at which the examinations are made.

The therapeutic indications become rationalized on the basis of the above classification. That is, in hemorrhage the indication is for an immediate replacement of the blood loss by transfusion, and often subsequent maintenance of blood volume by fluids introduced orally, rectally or by vein. The anemias showing a deficiency of hemoglobin synthesis or red blood cell formation are best treated with liver, or iron plus whole liver. Iron must be used in sufficient quantity. Recent work has demonstrated that the amounts of iron used in the past have been wholly inadequate. It seems that the best procedure is the use of ferric ammonium citrate in doses of two grams (30 gr.) two or three times daily. This can be used as a powder weighed into proper amounts, or in solution. Iron alone is often effective, but if combined with whole liver, not liver extract, the regeneration response is more marked. It has been recently demonstrated that whole liver contains what seems to be a hemoglobin building factor which enhances the effect of iron alone. Very often the anemia, when a simple nutritional anemia, may be built up by the use of certain food constituents known to contain iron or to be stimulative to red blood cell or hemoglobin production; such are blood sausage, kidney, gizzard, heart, apricots, and prunes. Human beings probably cannot as easily convert the chlorophyll combination of iron into hemoglobin as can the herbivorous animals, although they do it to a certain extent. It has been thought that the fetal liver might contain fractions more potent for hemoglobin and red blood cell formation than adult liver, and these have been tried out. Good results have been mentioned by others, but in our hands it has not been as effective as the combination of iron and whole adult liver.

In the definitely aplastic types whole blood transfusions have been at times stimulative. Arsenic has been of little value. As adjuncts to blood building in any form of anemia, sunlight or ultraviolet radiation has been employed with good results. Copper has been suggested for use in these anemias, and is probably useful by salt or catalytic action, as are also zinc and manganese, but no direct effect can be attributed to

any of the metals, except iron.

The idiopathic, primary aplastic anemia will not respond to anything and is quite uniformly and rapidly fatal.

The indication in the hemolytic types of anemia is, of course, to remove the cause; that is in pregnancy to empty the uterus; in syphilis, antiluetic treatment, and in certain types with a chronic splenomegaly, splenectomy. In acquired or familial hemolytic icterus, splenectomy often proves beneficial, although since these diseases are essentially chronic and subject to remissions, very often it is sufficient to repair the damage following each hemolytic crisis.

In the mixed types, various combinations of therapy must be employed. Pernicious anemia individuals may be thrown into a remission by the use of whole liver, liver extract or hog stomach extract, and maintained in such remissions apparently indefinitely, or at least until they reach a chronic aplastic stage. Other mixed types of anemia may be treated with combinations of transfusions, iron diet, iron, whole liver, whole blood injections, and whatever procedures seem indicated from time to time from an examination of the current blood condition.

Underlying physical states must be handled, of course hemorrhoids, polyps, fibroids must be treated or removed. Malignancy and parasites must be eradicated. Ulcers require appropriate treatment wherever they occur. Myxedema, nephritis, diabetes, lues, tuberculosis all require the usual management. Pregnant women must be carefully watched. Inadequate diets leading to various states of malnutrition must be corrected. Sources of poisoning and toxemia must be removed. Chronic infections should be eradicated.

In conclusion, emphasis must be placed upon the estimation of just what is occurring in the blood itself at certain intervals, and on the evaluation of how much the underlying condition of the patient is concerned in the particular mechanism involved.

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NEMBUTAL "844" IN OBSTETRICS

By JOHN D. GRAHAM, M.B., M.D.

DEVILS LAKE, NORTH DAKOTA

Barbituric acid derivatives, for years, have occupied a definite place in the realm of therapeutics and have been used with success in cases requiring a fairly mild sedative or hypnotic. During the past year or two, considerable experimental work has been done, and publicity given, to preparations containing sodium ethyl salts of barbituric acid. These preparations have been used chiefly in pre-operative sedation, with very gratifying results.

Their use in obstetrics has been, however, more or less of a side issue, and for that reason I thought it might be of interest to report my experiences, having used this form of barbiturates as a means of pain relief in childbirth. The preparation used in this rather short series was sodium ethyl (1 methyl-butyl) barbiturate, having the trade name of Nembutal "844." Nembutal was selected as it belongs to the so-called "short acting" group of barbiturates. The advantages possessed by this "short acting" group are minimal dosage, more rapid elimination, greater freedom from after complications, and less tendency towards extreme restlessness or delirium. Dr. J. S. Lundy (*Journal of Anesthesia and Analgesia*, August, 1930), reports a series of four hundred surgical cases where Nembutal was given orally, per rectum, and intravenously. He obtained a desired anesthesia with less tendency to delirium using only one-half the dosage required of other barbituric acid derivatives, and as might be expected, the recovery period was correspondingly shortened.

In the last few months I have had occasion to give Nembutal "844," to fifty-eight obstetrical patients, who were without exception in the hospital. I think most forms of obstetrical anesthesia are adapted for hospitalized patients only. The series of fifty-eight patients consisted of thirty-two primiparæ and twenty-six multiparæ. Delivery was spontaneous in thirty-eight cases, operative in the remaining twenty. The twenty operative cases consisted of fifteen prophylactic low forceps deliveries, following episiotomy, three cases were delivered by breech extraction, following internal podalic version, and in the remaining two cases labor was induced by insertion of a Voorhees bag. Nembutal was administered per os in capsules containing one and one-half grains,

and by intramuscular injections. For the intramuscular route .5 gram of the drug was dissolved in ten cubic centimeters of sterile distilled water, and then varying amounts of this solution were injected. Twenty-five patients received Nembutal by mouth only. The remaining thirty-three patients received the drug both per os, and intramuscularly. The maximum dosage given by mouth, during labor, was six grains (four capsules). The amount given intramuscularly varied from a single injection of .25 gram to a maximum of 1.45 grams, given in four injections, over a period of thirteen and one-half hours.

The technique of administration varied greatly, depending, naturally, on the stage of labor the patient was in when admitted. In the great majority of cases medication was started when the patient was in active labor: i. e., when pains occurred every five or six minutes lasting sixty seconds or so, and when internal examination showed some definite signs of cervical dilatation and effacement. At this time the patient received morphine sulphate gr. one-sixth and scopolamine gr. one one hundredth by hypodermic, and either one or two capsules of Nembutal by mouth. In more than a few cases, mostly multiparæ, with normal presentation and position, and no apparent dystocia, no more anesthetic agents were necessary. The patient was carried through to the termination of her labor in a quiet sleep, rousing with her second stage pains and needing perhaps but a few drops of inhalation anesthesia as the head swept over the perineum.

There is no doubt in my mind that the Nembutal acts as a very definite synergistic agent when given in conjunction with morphine and scopolamine. The analgesic effect is very definitely prolonged, and the Nembutal seems to lessen the chances of the scopolamine causing the patient to become excitable or violent. In most primiparæ, however, additional anesthetic medication was necessary. Another hypodermic of grain one one hundredth or grain one one hundred fiftieth of scopolamine was given about one to two hours following the initial dose of morphine, scopolamine and Nembutal. Following the second scopolamine hypodermic (usually about two hours) Nembutal in solution was given into the muscle in dosage varying from .25 gram to .4 gram. The drug was given deep into the gluteal or deltoid areas. The patients had no following

*Read before the Pine-Chisago County Medical Society, December 16, 1930, and at the Trudeau Medical Society meeting, February 21, 1931.

irritation around the site of injection except in one case, where I am sure the drug was not given deeply enough. In the great majority of cases only one intramuscular injection was given, but in long slow labors it was repeated in some cases two or three times, as was required. The results on a whole were very gratifying. Most patients remember very little or nothing at all of their labor, following this form of analgesia.

The natural question that arises in anything pertaining to an obstetrical anesthetic, is the possibility of danger to the mother or newborn. I have observed absolutely no deleterious effect as far as the mother is concerned. It has been proved that after giving ten grains, the equivalent of six capsules, in a single dose by mouth, no sign of the drug could be found in the urine. This cannot but mean that even this very large dose must be very quickly eliminated by the body. In this respect Nembutal differs from other barbiturates. In regard to the infant, there were no stillbirths in this series. Three babies were slightly cyanotic (a normal ratio) and needed artificial aid to promote the respiratory act. The rest of the infants cried lustily at birth and were normal in every respect, and I cannot but conclude that the newborn has nothing to fear as far as Nembutal is concerned.

The only drawback to this form of analgesia is that occasionally (once in this series) the patient becomes highly excitable, perhaps to the stage of violence. Whether this is a scopolamine or Nembutal effect is hard to say. But wild though the patient may be, when the labor is over, her mind is a blank as far as pain recollection is concerned, and to her the anesthetic was highly successful. This is the main reason why I do not use this form of anesthesia in house cases.

One or two case reports may be of interest to show the results obtainable:

1. Mrs. M. Aet. 18. Primipara.
Labor commenced 2:00 A. M.
Admitted 3:00 A. M. Definite labor.
3:30 A. M. Morphine sulphate gr. one-sixth,

scopolamine gr. one one hundredth Nembutal capsules 1.

Beautiful effect carrying patient along until noon.

12:30 P. M. Scopolamine gr. one seventy-fifth. Cervix softening rapidly.

3:45 P. M. Nembutal intramuscularly .4 gram.

Caput showing at 4:45 P. M.

5:00 P. M. Episiotomy, low forceps, repair. No additional anesthetic at time of delivery.

Baby cried at birth, normal color.

Patient remembered nothing until 5:00 A. M. next morning. What better result than this could be wished for?

2. Mrs. C. Aet. 23. Primipara.

Admitted 10:00 A. M. R. O. P., in labor.

Patient very nervous and apprehensive.

11:00 A. M. Morphine sulphate gr. one-sixth, scopolamine gr. one one hundredth Nembutal capsules 1.

5:00 P. M. Nembutal .4 gram in muscle.

2:00 A. M. Nembutal .25 gram in muscle.

9:00 A. M. Ether—a few whiffs—delivery.

First recollection 11:00 A. M., twenty-four hours after admittance. Results such as these are unfortunately not obtainable in every case, but the failures to obtain satisfactory pain relief from this form of analgesia are so few and far between, as to become almost rarities.

Summary:

1. Nembutal "844" a barbituric acid derivative, judging from a small series of cases, should be included in the armamentarium of obstetrical anesthetics.

2. It gives satisfactory pain relief in the vast majority of cases.

3. It has not, in my opinion, exhibited any deleterious effect on mother or child, due likely by its rapid elimination by the body.

4. It definitely prolongs the action of morphine and scopolamine.

5. The cervix seems to dilate and soften at a much more rapid rate in cases where Nembutal has been given.

(I wish to extend my thanks to Dr. J. F. Biehn, of Abbott Co., for his very kind coöperation.)



DESENSITIZATION IN SERUM THERAPY*

BY ALBERT V. STOESSERT, M. D.

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The value of serum therapy in the treatment of certain diseases is well established. Although the early serums which were used were crude preparations, those available at the present time are fairly well purified and concentrated. This has permitted the use of small amounts of these highly potent serums with good therapeutic results. In spite of this, reports of serum accidents still occur in the medical literature. Many accidents following serum therapy are never reported.

The phenomena associated with the administration of foreign therapeutic serums to patients is known to almost all physicians, but the best means of preventing a possible severe reaction is known to only a few. In order to understand correctly the present day method of serum therapy, a few words must be said concerning those individuals who are sensitive to the serums.

There are two groups of individuals who may react violently to a serum. First, there are those who have received at one time in the past a serum. All patients receiving a serum are not sensitized. When compared with the laboratory animal, the guinea pig, man is many thousands of times harder to sensitize, but once sensitized, he is hard to desensitize. Occasionally an individual lends himself to easy sensitization when receiving a serum. In such a case, a small amount of serum may be just as effective as a large amount in the production of sensitivity.

Second, there is that group of individuals who have a history of an allergic disease. A patient who has or has had allergic eczema, urticaria, allergic rhinitis, or bronchial asthma may react to the administration of a serum with violent shock leading to death. If the individual is sensitive to animal emanations such as horse dander and responds with attacks of allergic rhinitis or bronchial asthma, then that same individual may be sensitive to animal serums such as horse serums, and careful desensitization is necessary. Desensitization may be very difficult and in some cases it is impossible to bring it about completely. Such an individual will cause much more trouble than one who has been sensitized by a previous injection of serum.

To be absolutely safe in every case, a skin test should be performed in addition to a good history of previous serum therapy and of allergic diseases.

For this skin test, the serum or antitoxins should be diluted ten times with sterile physiological saline solution and then 0.1 cc. of this preparation is injected intradermally on the forearm. A control test of sterile physiological saline solution can be placed on the other arm. About ten to twenty minutes later a positive test will reveal itself as an area of distinct redness. If projections like pseudopods have appeared, the test is definitely positive. The control test must of course be negative. If the case permits, a later reading may reveal a delayed positive test. The majority of the tests are however positive after twenty minutes.

There is still another test called the ophthalmic test. This consists of instilling one drop of a one to ten dilution of serum into the eye. If congestion, swelling, and pain occur, the test is positive. The positive test is controlled by instilling one or two drops of a one to one thousand epinephrine solution into the same eye after the reaction has been observed. This will prevent any possible damage to the eye.

A positive skin or ophthalmic test is very important; a negative one does not always indicate that a patient will not react. The skin of some individuals is not an indicator of sensitivity.

The following procedures are suggested for serum therapy, although it stands to reason that no absolute rules can be given. After the physician understands the underlying principle, he must be guided after all by close observation of the patient and familiarity with the symptoms to be expected.

1. *When the patient has never received a serum and has a negative skin or ophthalmic test,* desensitization is not necessary if the serum or antitoxin is to be given subcutaneously or intramuscularly. If the serum is to be given intravenously or intraspinally, it should be warmed to body temperature and the first few cubic centimeters should be injected very slowly with careful observation of the patient. The most highly purified serum available should always be used for intravenous and intraspinal administration.

2. *When the patient has never received a serum and has a positive skin or ophthalmic test,* the serum is given subcutaneously or intramuscularly in several doses. The first dose is usually around 1 cc. diluted with about 4 cc. of sterile physiological saline solution. The second dose is

*From the Allergy Clinic, Department of Pediatrics, University of Minnesota.

given ten minutes to two hours later, and it comprises the remainder of the serum necessary for a satisfactory treatment of the case. Intravenous and intraspinal administration require "intravenous desensitization."

Intravenous desensitization is performed by injecting intravenously 0.1 cc. of the serum well diluted with sterile physiological saline solution. This injection as well as all those which are to follow should be made very slowly. If a general reaction occurs with some cyanosis, dyspnea or increased rapidity of the heart rate, no more injections should be made for one to four hours, depending upon the severity of the symptoms. Then start with the same dose which caused the reaction. If no reaction occurs, the second dose is given twenty to thirty minutes after the first, and consists of 0.2 cc. of the serum well diluted as before. The third dose is given twenty to thirty minutes after the second, and it is double the second dose. Each dose is given twenty to thirty minutes after the previous one, and the actual amount of serum is doubled each time until all the serum has been given intravenously.

3. *When the patient has received a serum and the skin or ophthalmic tests are negative or positive*, the subcutaneous or intramuscular injections should be made in several doses, especially in the presence of positive tests. The first dose should be 0.5 cc. of the serum well diluted with sterile physiological saline solution. One hour later, if no reaction occurs, the second dose of 1 cc. of the serum is given, and then one to two hours later the final dose of the remainder of the serum is given. Intravenous and intraspinal injections require the "intravenous desensitization."

4. *When the patient gives a history of allergic disease*, the administration of serum by any route of injection is dangerous. This is particularly true if the skin test is positive; if the skin test is negative the danger is less but by no means absent. The ophthalmic test is usually not done,

for a marked eye reaction may result. Subcutaneous or intramuscular injections are started with 0.01 cc. of the serum diluted about one hundred times with the sterile saline solution. If no unfavorable signs occur, the dose may be doubled every thirty minutes until all of the serum has been given.

In case it is necessary to inject serum intravenously, the same procedure is followed until a dose of 1 cc. is given subcutaneously and then thirty minutes later 0.1 cc. of the serum well diluted in saline may be given intravenously, and at intervals of twenty minutes thereafter the intravenous dose is doubled until the required amount of serum has been given.

In case it is necessary to inject serum intraspinally, the same procedure should be followed until a dose of 10 cc. has been tolerated intravenously, then that amount may be given intraspinally with caution.

Two drugs have been found useful in the prevention and treatment of serum accidents. They are atropine sulphate and adrenalin chloride, the latter being most effective. Atropine or adrenalin or both should always be on hand when administering serum to any patient. If shock occurs satisfactory results are obtained only when these drugs are given immediately. A few minutes delay may be disastrous.

When a patient is extremely sensitive to a serum, and circumstances make it necessary that he receive the serum, large doses of hypnotics can be given, but better still is an anesthetic. It has been found that light ether narcosis reduces the tendency to serum accidents or shocks.

No attempt has been made to go into too much detail for fear that this would mask the real value of this short presentation. More detailed discussions concerning anaphylaxis and allergy in their relation to serum therapy can be found in the writings of Besredka, Coca, Duke, Kolmer, MacKenzie and Hanger, and Zinsser.



THE GROWTH OF MEDICINE

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One of the most interesting aspects of the progress of civilized man is his struggle against disease. From the earliest of time, he has been face to face with illness, and in the interest of self-preservation he has been forced to use his every resource to protect himself from annihilation. He has fought bravely and intelligently, sometimes against great odds; but the final result has always been some contribution toward the conquering of disease. The history of medicine is a record of this struggle, showing medical advancements and regressions traveling hand in hand with the course of civilization.

The primitive man's method of combating disease was indeed a sorry mess. His conceptions of the causation of disease were wrapped up in superstition. The three prominent views which he held were: first, that disease was due to evil spirits that had to be either frightened away or satisfied by suitable offerings; second, that human enemies possessed supernatural powers which were used to produce hardships and disease, and so the belief in witchcraft originated; third, due to dreams and similar phenomena man was led to believe that the dead were frequently offended, and that their spirits showed resentment by the visitation of disease. It was in the midst of such conceptions that many strange and fantastic forms of treatment arose. Primitive man's practice of frightening the evil spirits of disease away by terrifying noises, and his use of taboos to keep the gods from inflicting pain, were all a part of his attempt to understand and combat disease.

I-em-hetop is the earliest known physician. He served the fifth dynasty of Pharaohs about 2700, B. C., and was a highly esteemed practitioner. We know nothing of his life except the above meager information found on his tomb. Of all the early civilized nations, the Egyptians made perhaps the closest approach to Greek efficiency in the treatment of disease. Their methods, however, were crude, and their therapeutic mixtures rather haphazard combinations. This is illustrated by a favorite application for baldness, a condition which even in their day seemed to create great concern. It consisted of equal parts of the fats of the lion, hippopotamus, crocodile,

goose, serpent and ibex, a truly imposing array of ingredients. Taken as a whole, their understanding of disease was greatly inferior to that of the Greeks, who first laid the foundation for modern medicine.

In the fifth century, B. C., Hippocrates gave birth to Medicine. He had labored long and diligently and finally brought forth, out of the darkness of superstition and ignorance, a child after his own image. It was quite an intractable world which the struggling and bewildered Medicine found itself confronted by. For centuries, the priests had governed the art of healing. They had firmly impressed upon the people that disease was a thing of the gods, and that no amount of human investigation or learning could alter its course. Under the guiding hand of Father Hippocrates, medicine began to shape itself. It started with the assumption that disease is a human responsibility rather than a divine one, and that to conquer it man must first learn to carefully observe and record its many and mysterious ways. It was a hard and prickly path. Time and again it seemed to falter, but through the ingenious efforts of the master, Hippocrates, it soon came upon a firm foundation. The early training which it received was given by one of the most subtle, profound and critical minds that has ever graced the history of medicine. Hippocrates was more than a thinker; he was a man of action. The abrupt and radical departure which he made from the accepted practices of the times identified him as a man of great courage and originality. To those who have read his works, the impression must be firmly rooted that medicine could hardly have had a more noble or worthy father.

After the impetus given by Hippocrates, Medicine struggled through its childhood years, groping and wondering. As the influence of the master became more distant, it began to forget his teachings, and became more and more obsessed with certain foreign beliefs. It came to accept theoretical speculations about disease as more valuable than clinical observations. It had become so dignified and meticulous that clinical investigations of disease were a bit distasteful. This

continued until the coming of its next great teacher, Galen.

Galen took charge in the second century A. D. He was one of the most versatile, industrious and powerful figures that Medicine was ever to know. To him must be given the credit of resurrecting the works of Hippocrates and again stressing their value. His greatest claim to fame rests with the fact that he gave the first lesson in experimental physiology. He was the first to make experimental sections of the spinal cord producing hemiplegia; he produced aphonia by cutting the recurrent laryngeal nerve. Galen, in spite of his tremendous contributions, which included 77 books and 14 essays on the subject of healing, did not play entirely fair. He set himself out as an absolute authority and led his pupils to believe that he had answered the last question pertaining to the art of healing. It was during Medicine's impressionable years, and this belief took a firm hold and could not be uprooted for over 1,400 years. So Medicine passed through the middle ages, learning little of scientific worth and doggedly maintaining that its teachings were correct and therefore final. It had become almost hopelessly entangled in theology and tradition when Paracelsus found it in the sixteenth century.

Paracelsus was a teacher of the old school, severe and exacting; scornful of those who refused to learn anything new. He saw that Medicine had become rather set and domineering in its ways; that old teachings had become sacred; that love of investigation had practically died. He set about his reform work in a bold and fearless fashion. Having ascended to a professorship at the University of Basel, his first official act was to burn the works of Galen. He then began his crusade against dogma, insisting, as did Hippocrates, that to learn the art of healing one must experiment and observe. To Paracelsus belongs the credit of having introduced practical chemistry to the medical world.

Close in the footsteps of Paracelsus came Vesalius, who also was sick of the reverence for the ancient teachings of Galen. Vesalius, the Father of Anatomy, showed up by actual dissection over 200 errors in the anatomical teachings of Galen, and thereby severely reprimanded Medicine for its faith in traditional authority.

The sixteenth century was at hand and youthful Medicine was about to receive some valuable lessons. Ambroise Paré, the army surgeon, had discovered some things that mankind could well profit from. It was customary in his day to use

boiling oil as a dressing for gunshot wounds. It was a horribly painful application, but custom had ordained its necessity so it was used without question. Paré, with his wealth of experience, soon learned that wounds without the boiling oil did better than those treated with it, and so he gave Medicine its first lesson in the clean, gentle treatment of gunshot wounds. He also reintroduced the use of the ligature in surgery, and did away with castration in herniotomy. He introduced massage, artificial limbs and eyes, and was the first to make a disarticulation of the elbow joint. He gave many other practical lessons which mark Ambroise Paré as one of the great teachers.

The work of Vesalius had done much to bring about a higher respect for anatomy and to encourage investigations as to the structure and functions of the bodily organs. William Harvey, who during the seventeenth century had been seriously concerned with the physiology of the blood, had made an epoch making observation. He discovered that the blood, instead of subscribing to an ebb and flow movement as was then believed, actually made a circuit of the body. He found that blood leaving the heart through the arterial system came back as venous blood, coursed through the lungs and again returned to the heart as arterial blood. This heretical teaching was first objected to, but its abundant proof soon won for itself a permanent place in Medicine's storehouse of knowledge.

Medicine was fast coming of age. It was learning things that were to mark it as a great and noble figure in the world of affairs. The seventeenth century brought to it the microscope and with it the Jesuit priest, Athanasius Kircher, who was one of the earliest of microscopists. He was the first to use the microscope in the study of disease. Medicine had received another weapon with which to battle disease. It was at this period of development that the greatest of microscopists introduced himself, Marcello Malpighi. He was the founder of histology and was professor of anatomy at Bologna, Pisa and Messina. He completed Harvey's triumph by discovering the capillaries.

During the latter part of the seventeenth century, Medicine had become a bit listless about its clinical observations and so we find Thomas Sydenham, England's Hippocrates, coming upon the scene and once more stressing the necessity of careful clinical observation in the treatment of disease. It was about this time that intravenous

injection of drugs and blood transfusions came into use. The first book on vital statistics was also published at this period. It was written by John Graunt. The art of healing was becoming increasingly complex and exact. Universities were springing up and Medicine was being besieged on all sides by new teachings, some good and some bad. Fortunately at this time when information seemed to come faster than it could be mastered, the scientific society and periodic literature came into being. Medicine had found a definite protection and encouragement.

During the eighteenth century, Medicine seemed to rest upon its laurels. It was a period of theorizing and systematizing, except for the work of a few outstanding teachers such as Albrecht von Haller, the Hunters, Morgagni, Wolff and Jenner.

Physiology had come to be recognized as an important science, and so Albrecht von Haller, the master physiologist, whom Garrison describes as one of the most imposing figures in medical history, came to do his part. His greatest single contribution was the laboratory demonstration that irritability is a property of all muscular tissue, and that sensibility is the exclusive property of nervous tissue. He was the author of many other valuable works which left a better understanding of the functions of the body.

Surgery received its greatest impetus during the eighteenth century from the Hunter brothers, William and John. William, essentially an obstetrician, discovered the separate maternal and fetal circulations, and was the first to describe arteriovenous aneurysm and retroversion of the uterus. John Hunter, the founder of experimental and surgical pathology, was one of the greatest of surgeons. He gave Medicine a new treatment for aneurysms, introduced artificial feeding by means of a rubber tube passed into the stomach, and made many other important discoveries.

Medicine was becoming well grounded in the fundamental sciences, for at this time it received the teachings of Giovanni Morgagni, the founder of modern pathologic anatomy, and of Casper Wolff, father of modern embryology. The field of physical diagnosis was enhanced by the genial and lovable Leopold Auenbrugger, the discoverer of percussion.

Toward the latter part of the eighteenth century, Medicine received its first effective lesson in the prevention of disease. During this period, smallpox was one of the worst scourges afflicting

mankind. Its pockmarks were so prevalent that few escaped them. A criminal was definitely labeled "not pocked" if he had escaped this infection. He was better identified if he had no pockmarks than if he had them. You are all acquainted with Jenner's discovery of smallpox vaccination. Once and for all he proved the truth of the old Arabian proverb, "It is greater to prevent an attack than to win a battle."

Bacteriology was founded as a science by Louis Pasteur and Robert Koch. These remarkable men, both living during the latter part of the nineteenth century, made bacteriology a necessary part of Medicine's armamentarium. The thousands of lives saved by their discoveries are monuments to their contributions. It was the work of Pasteur which directed the great Lord Lister's attention to antiseptic surgery, which was later replaced by the aseptic technique. This principle was one of the most important factors in making surgery the efficient and life saving science that it is today.

Surgery had previously received the gift of anesthesia. In 1844, Wells discovered nitrous oxide anesthesia. This was followed by Morton's discovery of ether anesthesia in 1846; and in 1847, Simpson introduced chloroform as an anesthetic in obstetrics. With antisepsis, asepsis and anesthesia, surgery had become a safe and painless science.

It was comparatively late before obstetrics became an important part of Medicine's acquisitions. For centuries it was regarded as the sole property of the midwife, and so no great strides were made in solving its medical problems. To such men as Francois Mauriceau, Hendrick van Deventer, William Smallie and William Hunter of the seventeenth and eighteenth centuries, belongs the credit of making obstetrics one of Medicine's responsibilities.

The history of obstetrics is filled with tragedies and perhaps the most outstanding one is that of puerperal fever. The accounts given of the lying-in hospitals of the seventeenth, eighteenth and nineteenth centuries, with their terrifying mortalities, make us indeed wonder how humanity survived. One of the most important boons to this science was the discovery of the infectiousness of puerperal fever by Semmelweis, of Vienna, and by Oliver Wendell Holmes. The story of their battles for the expectant mother is one of the great and noble chapters in the history of disease prevention. Within a period of one year, Semmelweis, by the practice of clean

obstetrics had reduced the maternal death rate in his ward from about ten, to one per cent. Since that time, Medicine has made puerperal fever a very minor cause of death. It is a preventable disease.

Phillipi Pinel (1745-1826), the noble minded physician of Paris, can justly be called the father of the modern and humane treatment of the insane. Previous to his time, their care was of a cruel and harsh nature. These unfortunates had little to hope for. They were thrown into mad-houses, chained, and made public curiosities. Pinel, with singular courage and wisdom, fought for their liberation from these unwholesome conditions. He finally freed them from their chains, put them in comfortable hospitals under kind physicians, gave them good food and sunshine, and lived to see that the practice was successful. Since then Medicine has struggled hard to master the mental diseases. Hundreds of institutions have been erected to give scientific care to those afflicted and to study the results of treatment and preventive measures.

The past sixty years have witnessed great progress in the conquering of disease. Klebs discovered the causative agent in diphtheria, a disease which was strangling thousands of people each year. This was followed by Emil von Behring's discovery of antitoxin, which was instrumental in decreasing the death rate of diphtheria in children from fifty per cent to twelve per cent in the first five years after its introduction. Typhoid fever was practically mastered by the work of men like Klebs, Eberth, Widal and Sir Almroth Wright. Bubonic plague, that most horrible of pestilences, which in 1665 is recorded as having plagued London to the extent of killing one fifth of its population, came under control. Asiatic cholera lost its deadliness through effective quarantine, disinfection and protective inoculations. Yellow fever was practically conquered by the work of General Gorgas and his associates. Syphilis lost its mystery through the work of Schaudinn, Wassermann and Ehrlich. Robert Koch, in 1882, found the cause of tuberculosis. Since then a great amount of antituberculosis work has been done. This disease has lost its

place as "the Captain of Death" and has fallen to sixth place in the rôle of killing diseases.

The World War gave Medicine an opportunity to test itself. With all its progress, knowledge and confidence it was still to learn more. It mastered the science of military sanitation and hygiene, the wholesale application of vaccines and inoculations for the prevention of disease, and the effective treatment of war wounds. Garrison states, "It is the first war in history in which the mortality from battle casualties has exceeded that from communicable diseases. There were four times as many deaths from disease in the Civil War as in the World War, while our recent death rate from wounds in hospital was reduced one half." Much was learned from civilization's costly tragedy.

And now Medicine, having attained early manhood, stands as a veritable giant in the world of power. It holds in its grasp the controlling secrets of infections, pain, epidemics, and the cause and cure of many diseases. They are its heritage. What if Medicine's massive knowledge should suddenly be blotted out; if it lost all it had gained? Picture if you will a civilization with no public health vigilance; if drinking water was no longer protected, and sewage was disposed indiscriminately. What if the barriers against epidemic diseases were entirely removed; if we lost our knowledge of vaccination and inoculation? When we remember that in every war except the World War, communicable diseases killed more people than did bullets, we can well imagine the extent of the tragedy.

Over 2,000 years have elapsed since Hippocrates lived. If he returned today, how would he view the child of his making? He would see before him thousands of hospitals, universities, clinics, dispensaries, medical organizations and vast assemblies all striving to aid Medicine in the art of healing. He would see internal strife as well as the harmony of union. He would undoubtedly wonder at its growth and its many phases and marvel over its accomplishments; and then, like the kindly philosopher that he was, he would perhaps shake his wise head and again say, "Life is short, art is long, the occasion fleeting, experience fallacious, and judgment difficult."



This is the ninth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

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THE MEDIASTINUM

A. Normal Appearance

In addition to the shadow of the heart and aorta, the mediastinal shadow includes the hilum or root shadows of the lungs. These are composed of the large vessels, bronchi, and tracheo-bronchial lymph nodes. They give an irregular shadow on each side of the heart, best seen on the right. Each vessel can be fairly well made out and in the adult there is usually some increased density due to repeated infections, anthracosis, childhood tuberculosis. Calcification of glands in the hilus presents itself as an irregular area of density, not homogeneous and usually not round. These are so common in adults that they have little or no pathologic significance.

B. Mediastinitis

A chronic inflammatory process in the posterior mediastinum may produce the following signs:

1. Diffuse increase in the density on both sides of the heart.
2. Dense bands extending down to the diaphragm. On the right side there may be a dense shadow extending to the diaphragm and even to the lateral chest wall.
3. Paradoxical movement of the heart.
4. Traction diverticula and distortions of the esophagus. (To be taken up in detail under esophagus.)

C. Mediastinal Effusions

Encapsulated fluid or pus between the mediastinum and the lungs gives:

1. On the right side the appearance of a "double-heart", there being a large dense triangular shaped shadow, with its base at the diaphragm. The heart is displaced to the left.
2. On the left side the triangular shaped shadow may be present, but, lying behind the heart, it is superimposed upon by the cardiac shadow. Films must be taken with the patient supine and with good technique to demonstrate this double shadow.
3. In the lateral view, the posterior mediastinal space, usually clear on inspiration, remains cloudy.

D. Mediastinal Abscess

Most frequently seen in the superior mediastinum but may be posterior also. It gives a rather diffuse, not sharply defined density, bilateral or entirely posterior. The latter two characteristics and its lack of sharp demarcation distinguish it from mediastinal pleural effusion.

E. Substernal Thyroid

This presents a dense, triangular shaped shadow with a blunt apex lying just above the arch of the aorta, the sides either straight or slightly convex. It passes up into the shadow of the neck. The trachea may be displaced or compressed. In the lateral view the shadow is shown just posterior to the manubrium sterni in the anterior portion of the chest. It can be seen with the fluoroscope to move with swallowing. Calcification occasionally occurs and gives an irregular very dense, non-homogeneous shadow.

F. Dilated Large Vessels of Neck

A distinct shadow in the superior mediastinum may be produced by the dilated large vessels around the arch of the aorta, especially in the prone or supine position. The outer margins of this shadow are concave and it is not very dense.

G. The Thymus Gland

Enlargements in children and infants produce a striking rectangular shadow in the superior mediastinum, extending down over the heart like a cap. Usually it is larger on the right and may extend almost down to the diaphragm. The broadening of the superior mediastinum is very marked and is increased with expiration or prolonged crying. The outer borders are convex. In estimating size the factor of respiration is of great importance as during deep inspiration the shadow becomes appreciably smaller.

It is possible to demonstrate, at times, compression of the trachea during expiration or crying. This is best shown in the lateral view and may be due to the pulling up of the thymus into the small retro-sternal space where it crowds against the trachea.

H. Dilated Esophagus

Enormous dilatation of the esophagus occurs with cardiospasm and may cause a distinct shadow.

ow to the right of the heart due to the food and fluid content. The characteristic of this shadow is that it passes up into the neck well above the sternum.

I. *Paravertebral Abscess*

may occasionally simulate a mediastinal empyema or abscess. It is enlarged in the ordinary chest film but the true nature of the process is revealed when a film of the spine with the patient supine is made.

J. *Glandular Enlargements*

1. *Tuberculosis.* (See later.)
2. *Hodgkin's and lymphosarcoma.*

These produce lobulated densities on either or both sides of the heart shadow usually in the superior portion but passing down to the inferior portion also. They are moderately dense, irregular, multiple, varying in size. There may be infiltration of the lung about these which gives numerous dense radiating lines and a diffuse haziness. Small densities in the lung roots themselves are of little significance.

K. *Tumors*

1. *Benign.*

Rarely a cyst or fibroma producing a dense, sharply demarcated, rounded projection into the lung field can be seen.

2. *Malignant.*

These produce irregular, hazy, not sharply outlined densities which invade the lung about them, displace the heart away from them.

L. *Movements of the Mediastinum* (Shown on fluoroscopic examination.)

1. *Normal.*

There is no movement on respiration normally.

2. *Displacements.*

- a. Fluid in the pleural cavity or mediastinum, tumors of the lung or mediastinum, and pneumothorax displace the mediastinum to the opposite side.
- b. Adhesive pleurisy, mediastinitis, pericardial adhesions, chronic lung fibrosis, atelectasis, displace the mediastinum toward the side of the lesion.

3. *Movements with respiration.*

A pendulum movement of the mediastinum toward the side of the lesion with inspiration and away from it with expiration, occurs with pneumothorax, pulmonary emphysema, pulmonary atelectasis.

M. *Value of X-ray Study of Mediastinum*

The roentgen examination is invaluable in detecting enlarged glands from any source, enlargement of the thymus, a substernal thyroid, and mediastinal effusions. It is less effective in the other mediastinal diseases.

THE DIAPHRAGMS

A. *Normal Appearance*

The diaphragms produce a smooth, domed shadow forming the lower boundary of the lungs. The right is about 1 to 2 cm. higher than the left. An acute angle is formed with the lateral chest wall. On inspiration there is a free even downward movement. There may be several curves normally in the surface of the right due to irregularities on the upper surface of the liver.

B. *Adhesions*

Tent-like projections appear on the surface, often connected with interlobar bands or the pericardium. Movement on the affected side may be restricted. The costo-phrenic angle may be obliterated.

C. *Pleural Effusion*

This obscures the shadow, first obliterating the costo-phrenic angle. Any heavy density in the pleura or lung may make the diaphragms invisible. On the left the diaphragm can then be demonstrated in the upright position by the gas in the cardia of the stomach which always lies just under the diaphragm.

D. *Gas Under the Diaphragm*

A localized area of lessened density representing gas may appear in the upright position and be due to the following:

1. On the left, normally, gas is present in the *cardia of the stomach* and in the *splenic flexure of the colon*.
2. Rarely the *hepatic flexure* rises above the liver giving a gas bubble under the right diaphragm.
3. *Subdiaphragmatic abscess* may produce gas.
4. *Pneumoperitoneum* from a *ruptured viscus*, particularly ruptured gastric or duodenal ulcer, will always show a small area of lessened density between the right diaphragm and the liver, a bubble of gas.
5. *Artificial pneumoperitoneum* will usually give the shadows of gas under the diaphragms and permit their visualization.

E. *Displacements of the Diaphragms*

1. *Downward* displacement may occur from: Ptois of the abdominal organs, pulmonary emphysema, pleural effusion, pneumothorax.
2. *Upward* displacement may occur from: Adhesions, paralysis, subdiaphragmatic abscess, tumors, or enlargements of liver, peritonitis, ileus, ascites, increased intra-abdominal pressure, pregnancy, decreased aeration of lung as in chronic fibrosis or atelectasis.

CLINICAL PATHOLOGICAL CONFERENCE

By E. T. BELL, M.D.

Department of Pathology, University of Minnesota
MINNEAPOLIS, MINNESOTA

The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—30—1537.

The case is that of a white man, 74 years of age, admitted to hospital October 8 and died October 19. On admission he complained of dyspnea, orthopnea, edema, inability to pass urine. He had noticed palpitation of the heart at 17 years of age with associated marked pounding of the heart. This condition had persisted, palpitation occurring in attacks, at one year or less intervals. For three or four years before admission he had these attacks which persisted as long as half a day. In the spring of 1930 he noticed swelling of the feet which gradually ascended the legs. He saw a physician and was given digitalis; the swelling was reduced to practically normal.

He had his scrotum tapped once and it drained for ten days to two weeks, draining in amount one-half gallon per day. Two weeks before admission the ankles again swelled, the swelling extending up the legs. The hands were swollen at the same time. During this time the patient was very dyspneic and could not get his breath in a recumbent position. He had had marked orthopnea for three to four years. His present attack of orthopnea had been very marked for the two weeks preceding admission. He also stated that he had been unable to pass urine for two years before admission and had had to catheterize himself four to five times daily; his ordinary urinary stream was small and dribbling. For four to five years before admission the attacks of palpitation had been more frequent and of longer duration, persisting from fifteen minutes to fifteen hours. Palpitation was relieved by the administration of digitalis. The past history is negative as far as any history of rheumatic fever or hypertension is concerned. Patient did not remember any severe childhood diseases, and had had no operations or serious injuries. He had had no precordial pain. Venereal disease denied. Occupation farmer.

Examination. Few carious teeth. Limited expansion of both sides of the chest. The heart was irregular. No thrills were palpated. There was no pulsation of the neck vessels. No friction rubs were detected. The heart on percussion was considered to be bootshaped. The pulse was 64 and irregular; the blood pressure was 168/108. The breath sounds were normal throughout anteriorly and somewhat diminished but normal posteriorly. Presystolic and systolic murmurs were detected at the apex. The systolic murmur was considered to be loudest over the aortic area and was transmitted along the neck vessels to the shoulder. The abdomen

was distended and tense. There was edema posteriorly over the sacrum. A fluid wave was elicited. There was slight edema of the penis and scrotum. The testes were considered normal. There was edema of the hands, arms, and forearms half way to the shoulder. There was edema of both lower extremities up to the level of the iliac crest. Reflexes were decreased throughout. There was positive left Babinski and questionable right Babinski. Rectal examination revealed protrusion of the rectal mucosa. Prostate considered to be large, more on the right than the left. Diagnosis was made of hypertension with decompensated heart and prostatic hypertrophy.

The last examination and findings were essentially the same. The liver, however, was palpated three fingers below the costal margin. The diagnosis of adherent pericardium was also made.

Urinalysis October 9: specific gravity 1020; acid; no sugar or albumin; negative sediment. These findings remained essentially the same throughout the patient's stay in the hospital. Blood on October 9: hemoglobin 77 per cent; red cells 3,750,000; white cells 8,000. 65 per cent polymorphonuclears, lymphocytes 35 per cent. Wassermann negative. October 19 white cells were 17,850; blood urea nitrogen 18.66 mg.

Portable x-ray examination showed marked deformity of the thorax associated with scoliosis of the mid-thoracic spine. The heart seemed to be somewhat enlarged but the exact type could not be made out because it was not well visualized. There was suggestion of enlargement of the left ventricle. There was considerable congestion in the base of the right lung and beginning pneumonic consolidation seemed probable. The left costophrenic sinus was not well visualized because of approximation of the ribs in this region.

At the time of admission the patient was very weak. Respirations were labored. He was unable to lie down flat in bed. There was some cyanosis of the face. He was very restless; rested only after morphin. On October 10, auricular fibrillation was noted. There were no palpable thrills. The heart was enlarged and a systolic murmur was heard over the apex as well as over the pulmonic and aortic areas. The second sound was distant. Some edema of the skin; possible edema of the lungs. The clinical diagnosis at this time was hypertension heart with decompensation. October 11, severe dyspnea; edema of the scrotum; abdominal pain. October 16, a severe coughing spell followed by expectoration of a large amount of blood. October 18, bleeding from the rectum; Cheyne-Stokes respirations. Oc-

tober 19, profuse perspiration; pulse became imperceptible; death 3:15 A. M.

Post-mortem report. No jaundice. Pitting edema up to the knees; edema also of the hands. 100 cc. of clear fluid in the peritoneal cavity; about 300 cc. of clear fluid in each pleural cavity; 250 cc. of clear fluid in the pericardial cavity. The heart weighs 700 grams; all valves normal except the aortic which shows marked thickening and deformity with the presence of calcified nodules; no active inflammation in the leaflets. The right lung weighs 1100 grams; multiple areas of infarction two to six cm. in diameter; some pneumonia around the infarcted areas. The left lung weighs 425 grams; moderate edema. The spleen weighs 100 grams. The liver weighs 1600 grams; shows marked chronic passive congestion. The gall bladder contains no calculi; the wall is not thickened. The kidneys weigh 150 grams each; fine granular pitting on the surfaces. Purulent orchitis in the left testis.

Diagnoses. 1. Old healed aortic valve defect with stenosis and insufficiency, probably due to rheumatic endocarditis.

2. Hypertrophy and dilation of the heart and general venous congestion.

3. Infarction of the right lung.

Comment. The clinical impression of this case was hypertension heart with cardiac failure, since no systolic murmur was heard and no thrills were palpable. Functionally the valve showed some stenosis and some insufficiency. The source of the infarcts in the right lung was not determined; the probable origin was from thrombosis in the veins of the lower extremities.

Autopsy—30—1600.

The case is that of a white woman, 51 years of age, who began to complain of a dull pain in the right leg in December, 1928. This pain gradually increased in severity until finally the patient became confined to bed in August, 1929. She was admitted to hospital in April, 1930, with a diagnosis of sciatic rheumatism. While in hospital an abdominal tumor was discovered during routine examination. She was admitted to another hospital, complaining of a painful abdominal tumor and pain in the right leg, and a burning pain across the abdomen. The past history from all standpoints was essentially negative.

On physical examination in June, 1930 a walnut sized mass was found at the base of the left sternocleidomastoid muscle; this mass was hard, not adherent to the skin, and not tender. The chest examination was negative except for an area three cm. in diameter at the angle of the left scapula where normal resonance was absent and bronchial breathing was present. Blood pressure 120/68; pulse 134 and regular. Examination of the abdomen showed a mass in the right lower quadrant the size of an orange, hard, nonpulsating, and movable. A similar but larger mass was noted in the left lower quadrant. This seemed to be connected to a third mass in the left upper quadrant. No connection between these masses and the liver and spleen could be made out.

Urine examinations were negative except for the presence of ten to fifteen white blood cells and four to five red blood cells per high power field. The hemoglobin was 73 per cent; red cells 3,650,000; white cells 6,650 with normal differential; there was slight anisocytosis and hypochromasia; slight polychromasia and basophilic stippling.

A clinical diagnosis of abdominal malignancy was made and exploratory laparotomy was done. At operation a large tumor was found in the mesentery of the small intestine with metastases in the pelvis, the cul-de-sac, and the abdominal peritoneum. There were no metastases found in the liver. Material was removed for microscopic examination and this examination showed subacute inflammation. A few areas were present in the section which suggested infiltrating cords of epithelium but there was not sufficient to make a diagnosis of malignancy.

Postoperatively the patient complained of epigastric pain and nausea as well as pain in the back, right thigh and hip. X-rays revealed osteoblastic and osteoclastic changes in the lumbar vertebrae and pelvis, i. e., metastatic tumor.

The patient was given deep x-ray therapy from this time until her death. The pain, previously mentioned, persisted until her death.

Post-mortem report. Extreme emaciation; edema of the feet; an icteric tinge to the skin. The peritoneal cavity shows generalized adhesions of the omentum to the anterior abdominal wall. There are scattered fibrous adhesions in both pleural cavities. The heart weighs 225 grams and is normal. The lungs show no evidences of pneumonia or metastatic tumor. The spleen weighs 100 grams and its capsule is covered by small nodules which appear to be metastatic tumor. The liver weighs 1350 grams and shows fatty metamorphosis but no evidences of tumor. The gall bladder is not dilated. The gastrointesinal tract is normal throughout. Between the folds of the mesentery of the small intestine is a mass 13x8x6 cm. which is very firm, nodular, and on section has a uniformly fibrous appearance; it is rather sharply marked off from the adjacent tissues. The left kidney is of normal size and shows multiple small cortical abscesses. In the upper pole of the right kidney there is a small nodule which is apparently a metastasis. Multiple abscesses are also present in this kidney. Both ureters are dilated. The wall of the urinary bladder is markedly thickened and its mucous membrane shows acute cystitis. The pelvic and lumbar lymph nodes are markedly enlarged, the paravertebral nodes pressing upon the aorta. The appearance of the cut surfaces of these nodes is similar to that of the tumor in the mesentery. The cul-de-sac is almost completely obliterated. On blunt dissection both ovaries are identified and from them exudes a greenish pus. Elsewhere the cut surface of the ovaries has the same uniformly fibrous appearance noted in the mesenteric tumor and in the lymph nodes. Both tubes are infiltrated by tumor as are the superior and posterior walls of the uterus.

Diagnoses. 1. Carcinoma of the ovaries with direct extension to the uterus and fallopian tubes and metastases to lymph nodes, mesentery, capsule of the spleen, and the right kidney. 2. Bilateral hydronephrosis with pyelonephritis.

Comment. This case illustrates the symptoms which are to be referred to the metastases of a malignant tumor prior to the time at which the primary tumor gives evidence of its presence; it is an instance of a patient being treated for neuralgia or neuritis when the underlying process is of a much more serious nature, the underlying process having been entirely overlooked for a long period of time. The presence of a persistent neuralgia in a person of middle age or older indicates that a tumor should be ruled out before the case is passed as a mere functional condition.

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DIETARY DEFICIENCIES (VITAMIN D)

Vitamin D (Antirachitic) was demonstrated to be distinct from Vitamin A by McCollum. When the diet is deficient in this vitamin there develops instability of the nervous system and muscular weakness. When it is absent from the food it results in rickets.

Rickets is a nutritional disease, characterized by an alteration in the growth of the bones. It occurs during the first two years of life.

Apparently the first recognition of rickets was in the 17th century, although Vaughan believes the "Disease must be as old as the race." In the early history of the disease, it was attributed to various factors, premature weaning, hereditary syphilis, early marriage, etc. In 1860 Henner attributed the disease largely to undernourishment and improper food.

Rickets exists in all parts of the world, but it is more prevalent among the poor in the larger cities. In Vienna and London from 50 to 80 per cent of all the children seen at the clinics present signs of rickets. The disease is prevalent in the United States, especially among the Negroes. In 1920 there were 506 deaths from rickets in the U. S. registration area. One-fourth of this number were Negroes.

The very important predisposing factors in rickets are overcrowding and bad hygiene, and lack of sunlight. Rickets is much more prevalent among the poor than among the well-to-do.

Many clinical and experimental contributions on the subject of the cause of rickets have been made. Certain observers attribute it to a lack of "Fat Soluble A" in the diet, others to lack of sunlight and still others to poor hygienic surroundings. The most recent work points to a deficiency in vitamin D as the chief cause of

rickets. In fact this vitamin has been designated anti-rachitic.

Vitamin D helps to prevent rickets, a disease which is characterized by mal-development of the bony tissues of the body. It is sometimes called the "Sunshine Vitamin" because it is formed by the action of direct sunshine (or ultra violet rays from other sources) upon the substance of ergosterol which appears naturally in many plant and animal tissues, including the human skin.

When we expose ourselves to ultra violet irradiation, our own skin is enabled to serve as a factory of vitamin D for us, and the stimulation produced by this same irradiation increases the circulation of blood through the skin, and thus expedites the bringing of new ergosterol to be changed into vitamin D, and the taking of vitamin D from the skin through the circulating blood and lymph into the service of the body.

The discovery that vitamin D may also be produced by irradiation of foods or of ergosterol in other forms outside of the body has led to a very rapid commercial development of this idea. In this connection it is well to remember that vitamin D is one of the several vitamins that we need.

Mellanby in 1928 found that the provision of vitamin D with a diet, which, without it was defective for tooth development, caused the formation of smooth, white, glistening, regularly arranged teeth in dogs. On microscopic examination these showed evenness of calcification in both enamel and dentine; dogs on the same diet without the vitamins had rough teeth which were irregularly arranged in the jaws and which showed marked defects in calcification of enamel and dentine.

All observers agree that rickets is influenced by bad hygiene and lack of sunlight.

Its prevention, therefore, depends upon good hygienic surroundings and a reasonable amount of exposure to sunlight in addition to foods containing vitamin D.

Vitamin D is found in whole milk, cod liver oil and eggs. J. A. M.

ERADICATION OF BOVINE TUBERCULOSIS

As it is well known the death rate from tuberculosis has dropped about one-half during the past 20 years. Most of the tuberculosis that we have is the pulmonary type which is a cross infection from humans and this is being handled by isolation in sanatoria. The bovine type is an infection obtained from cattle which has almost entirely been eliminated from the cities where the milk is pasteurized or secured only from tuberculin tested cattle and where the meat is examined by government inspectors in the packing plants. It is not as yet handled in a way that is protective to the children of the farmer who does not have private testing. It is desirable to have it done in large areas rather than in such isolated patches as the individual farm since through the interchange of cattle the infection is always kept alive. It will be necessary to eliminate bovine tuberculosis in cattle before we can completely eradicate tuberculosis in humans and area testing is slowly but surely creeping westward. Michigan, Minnesota, Indiana, Illinois, Iowa, Wisconsin and North Dakota, and the eastern part of Nebraska are almost under complete control. Minnesota is rapidly finishing, county by county, complete testing. Just a few counties in eastern South Dakota are now under the area testing plan. Among all the cattle slaughtered at the Sioux City, Iowa, packing plants in 1916, there were 4.8% tuberculosis as compared to 1.0% in 1930 as the result of area testing in Iowa. In testing all of the cattle in the first 57 counties of Minnesota, there were 9.0% reactors to the tuberculin test while in the final tests in these same counties the percentage was only 0.28%. In one of the large packing plants in South Dakota, the government condemned 358 carloads of whole carcasses and parts of livestock for grease and sterilization on account of tuberculosis for the fiscal year ending May 2nd, 1931.

The packing industries and government veterinarians have organized a movement to complete testing in South Dakota. Although this is done for economic reasons it will indirectly help to eliminate bovine tuberculosis from children and deserves the moral support of every physician. The average cost to the counties in South Dakota has been about \$15,000.00, and during 1930, the owners of cattle which reacted positively to tuberculin testing received an average of \$78.00 per head. As an example of complete testing, the results in Woodbury County, Iowa, might be cited. It seems that in 1926, there were 1,600 cattle that reacted positively and when the test was done

in the fall of 1930 only 150 were positive. Apparently if the test is done after the 3rd year, the cost will be reduced from the second time on. If we eliminate tuberculosis from cattle it will eliminate tuberculosis from hogs because they receive it from the cattle. In addition the packers will be able to sell 5% more meat since the government inspectors are at present in certain plants condemning for destruction about 5% of all cattle tested.

There is, of course, some opposition to this movement as there is to every worthy cause. Critics of the testing think it is too expensive at this time and would increase the taxes. A few even state that testing spreads tuberculosis which is, of course, based upon unscientific knowledge and misinformation.

—C. W. F.

DR. A. W. ROBERTSON

From Litchfield, Minn., comes the sad news of the passing of Doctor Archibald Wright Robertson, on July 11th.

Dr. Robertson had not been in the best of health for some months but had been attending to his practice as usual. Since the death of his brother, Dr. W. P. Robertson, nine months ago, he had taken care of their heavy practice alone and this had proven so wearing that he was planning to leave in a short time for a much needed vacation in the northern part of the state.

Dr. Archibald Wright Robertson was born in Detroit, Mich., November 21, 1881. His father Dr. J. W. Robertson moved with his family to Litchfield in 1891.

Dr. Robertson finished the course in the Litchfield High school, and then went to the University of Minnesota. After completing the academic and medical course there, and taking his internship, he returned to Litchfield and joined his father in the practice of medicine.

Besides attending to a large practice, Dr. Robertson has given himself freely to the community. For six years he was a member of the council and for six years a member of the school board. He was always interested in athletics and gave his services as coach for the high school foot ball team for several years. He was chairman of the local committee on Boy Scouts and a trustee in the Presbyterian church at the time of his death.

He was also prominent in lodge circles, a Knights Templar, and a member of the Ozum Shrine.

Dr. Robertson was a man of the highest ideals and finest integrity. His loyal, faithful service had endeared him to the entire community, to whom he was known as Dr. Archie.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of May 13, 1931

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 13, 1931. Dinner preceded the meeting, which was called to order by the President, DR. J. S. GILFILLAN, at 8:00 p. m. There were forty-eight members and four guests present.

Minutes of the April meeting were read and approved.

DR. H. L. ULRICH read the Necrology Committee's memorial to DR. THEODOR BRATRUD.

DR. THEODOR BRATRUD, born in 1873, reared and educated in Minnesota, a son of the "Giants in the Earth," carried on the Viking spirit. Into the wheat fields of northern Minnesota he brought the knowledge of the expert, the kindness of the great, the humility and understanding born of the prairies.

His clinic was a haven of comfort and salvation to the afflicted of three states. Theodor Bratrud in his diverse parts might have been the prototype of the doctor in Sinclair Lewis' "Main Street"; in Ian Maclaren's "Beside the Bonnie Briar Bush"; in Joseph Collins' "The Doctor Looks at Literature." In his passing, one of the intrepid spirits of this State has unfurled his banner in its legendary halls.

A poet describes him in these lines:
*"A simple man, yet none in all the land
 More great. For he was ever found apart
 Where beds of human suffering grimly stand;
 And there, with soul alert, he lived his art—
 The tender gift of healing in his hand
 And God's sweet law of service in his heart."*

We, the members of the Academy of Medicine, confreres of THEODOR BRATRUD, thus pay tribute to his memory.

We further move that a copy of this be spread on the minutes of the Society and a copy be sent to his sister, Miss Luela Bratrud of Thief River Falls, Minnesota.

(Signed) F. E. BURCH,
 A. SCHWYZER,
 H. L. ULRICH, Chairman.

The scientific program was as follows:

DR. A. W. IDE (St. Paul) reported the following case:

The patient, a married woman 41 years of age, was first seen April 27, 1931, on account of acute abdominal distress. This patient had had six

children who are all living and well. She had no previous illnesses; neither had she had any injuries. Four years ago she had an abdominal operation elsewhere. The uterus was removed supravaginally on account of uterine bleeding. Her recovery from this operation was uneventful.

Five weeks ago the present trouble began. There was abdominal distress with some tendency to nausea. There was obstinate constipation which gradually became worse. There was not a complete obstruction, but the amount of stool passed was small, and there was some blood.

When we first saw the patient she was having rather acute abdominal pain, evidently due to obstruction of the bowel. The exact nature of the obstruction could not be determined, but in view of her previous abdominal operation, it was thought probable that the obstruction was due to adhesions resulting from this operation. The obstruction was evidently of the chronic type, but apparently it was becoming complete.

On April 29th, two days after the patient was first seen, an abdominal operation was performed. Under ethylene anesthetic the peritoneal cavity was opened through the old scar. When this was opened, a loop of markedly distended bowel protruded through the wound. Intraperitoneal examination revealed a mass in the ascending colon which had the feel of a circumscribed tumor.

Further examination revealed that there was an intussusception of the ileum into the large bowel. The loop inside of the bowel was hard and felt like a neoplasm of some kind. A considerable portion of the ileum was reduced, but one loop could not be freed. A resection of fourteen inches of small bowel including the mass was done. About four inches of the ileum proximal to the ileocecal valve was left. This was turned in as a blind stump, and a side-to-side anastomosis was made between the ileum proximal to the tumor and the cecum.

The patient made an uneventful recovery from the operation except for a mild wound infection. Now, fourteen days after her operation, she is sitting up and will be able to leave the hospital in a few days.

Intussusception in the adult is somewhat rare. In a monograph based on 400 cases collected from the London City Hospital by Perrin and Lindsay, the following figures are given: Approximately

70 per cent of these intussusceptions occurred during the first twelve months of life; 10 per cent during the second twelve months. In other words, 80 per cent of the cases of intussusception occur during the first two years of life, 15 per cent occur between the ages of two years and fourteen years, and 5 per cent occur after fourteen years.

Elliott and Corscaden analyzed 300 cases of intussusception in adults. They observe that 100 of these cases, or 33.3 per cent, were due to tumors of the bowel. Out of this 100 cases, 40 of these tumors were malignant and 60 were benign. You will observe from the specimen that this intussusception was due to a tumor.

A microscopic section of this tumor shows the surface to be covered by a thin layer of epithelium, evidently a remnant of the mucous membrane. An occasional mucous gland is seen near the surface. The rest of the tumor consists of spindle-shaped cells with an abundant mucinous intercellular substance. The diagnosis is myxoma. There are no mitotic figures and no areas of rapid growth, so the histological interpretation is *benign myxoma*.

Tumors of this type do not recur when completely excised. However, they have a notable tendency to local infiltration.

DR. A. E. BENJAMIN (Minneapolis) reported the following case:

I wish to report a case of unusually large encysted bladder calculi with enlarged prostate, hemorrhages and loss of weight.

The patient is a widower, retired farmer, 71 years of age, 5 feet 4¾ inches tall, and weighs 106 pounds. He has had very good health, with the exception of three attacks of pneumonia and rheumatism. He has had no injuries or operations. His family history is essentially negative.

About two years ago he began having pain through the bladder region, with dysuria, some frequency, and at times passed a good deal of blood, especially upon exertion. He had considerable gastrointestinal symptoms with extreme constipation, loss of appetite and weight, and he also complained of backache. Eight weeks ago he began having severe attacks of pain with vomiting and difficulty in emptying the bladder. A diagnosis of cancer had been made.

The throat and tonsils were red, tongue slightly coated, and his heart was dropped somewhat, but there was no irregularity. The lungs were negative. He had a full lower abdomen with prolapse of the stomach and intestines, and a weak left inguinal ring. The prostate was considerably en-

larged; he had a few hemorrhoids and moderate varicose veins of the legs. His blood pressure was 166/76, temperature 98.6°, pulse 80, and respirations 20. He habitually had from 500 to 800 cc. residual urine which contained a slight trace of albumin.

X-ray films of the pelvis and sound revealed two large stones in the bladder.

An operation was performed under spinal anesthesia. There was one stone 2¼"x1¾"x1¾" encysted back of the prostate and difficult to dislodge. The smaller stone 1¾"x1¼"x1¼" was lying over it. The bladder was closed without drainage, and a retention catheter inserted.

His progress has been very satisfactory since the operation; there has been no leakage of urine through the incision. The patient was able to void after the third day when the catheter was removed. There has been no residual urine since the operation; his temperature is normal, and he has had no vomiting. He was out of bed on the fifth day.

The conclusions and interesting factors about this case are: the unusual size of the stones, one stone being almost completely encysted back of the prostate; the pronounced symptoms of gastrointestinal disturbance; the loss of blood and loss of weight, and the supposition by friends and a physician that a cancerous growth existed.

It was decided not to remove the prostate, although considerably enlarged, as the residual urine and size of the prostate was thought probably due to the presence of the stones. The rapidity of progress after the operation, the lack of residual urine and the disappearance of all symptoms a few days after the operation were gratifying.

DR. FRANCIS F. CALLAHAN (Pokegama) read his Thesis, entitled "Collapse Therapy in Pulmonary Tuberculosis," and showed slides of X-ray films of a number of cases

DISCUSSIONS

DR. D. G. GARDINER (St. Paul) (by invitation): I have enjoyed Dr. Callahan's paper very much. Most of the phrenic nerve resections you have seen on the screen have been rather recent—in the last three or four years. Some of them speak for themselves. Looking at the slides in these cases is like looking at autopsies—one sees some of his good and bad results.

One thing Dr. Callahan mentioned in his paper but I do not think stressed sufficiently is the meticulous postoperative care necessary over such a long period of time. This consists in applying very tight adhesive strappings to the whole affected side and renewing them, each time tighter, every few days. This can be augmented by sand or shot bags over the lesion to aid in compression.

The good results one gets following thoracoplasty are attributable to the clinician who takes charge of the patient after operation. I also speak for Dr. Daugherty in this connection in his work at Ancker Hospital and Pokegama Sanatorium. A few years ago I remember seeing a patient who was operated for lung abscess.

A classical two-stage thoracoplasty had been done by a general surgeon who was not familiar with the necessity for such postoperative care, and, except for the scar on the patient's back, one could hardly tell which side had been operated. His X-ray picture showed complete regeneration of ribs following thoracoplasty with full return of symptoms. The lesson to be drawn is that convalescence following thoracoplasty takes a period of months and tedious care.

I think many of the good results that any one gets after phrenic nerve evulsion should be credited to the clinician, or the man in the sanatorium, who gives the same care postoperatively to the patient that he does pre-operatively. The selection of these cases is a very difficult problem, and the clinician sometimes picks cases which, even though he uses his very best judgment, are not suitable for thoracoplasty, but could tolerate a phrenicectomy and a long period of observation thereafter, since phrenicectomy is in itself a simple operation with very little possibility of harm.

I have had about 150 phrenic nerve evulsions and have not seen any complications from them. Many times they are only a test as to whether or not the patient can stand thoracoplasty, and in many instances they are sufficient to alleviate the symptoms—which really amounts to a cure.

Dr. Callahan mentioned the indications for thoracic collapse and for phrenic nerve evulsion, but of course the ideal type of phrenic nerve evulsion is the case with the basic lesion. Unfortunately, tuberculosis does not always strike the base; it usually is an upper lobe lesion. In our cases at Ancker Hospital there have been six cases of upper lobe lesion which have closed following phrenicectomy, but as yet we have not seen a suitably proven case of basal tuberculosis.

I think Dr. Callahan's review of the literature of this subject has been quite complete, and think it speaks well for his conservative management and the attention he has paid to the cases coming under his care, and for his following the cases for a long time postoperatively, which I think is an important point.

DR. H. LONGSTREET TAYLOR (St. Paul): It seems hardly fair to go away from a subject as recent as this without going back to see how it has gradually evolved from the dark days of the seventies. In my own experience, I can recall when we had no tubercle bacilli to look for, or at least we did not know we had them; we had no tuberculin to test with, no X-ray, and no collapse therapy.

It is not so far back now since the evulsion of the phrenic nerve and thoracoplasty have come into use. In the olden times when families were particular about their insurance standing, the death certificates were nearly always "chronic bronchitis." That lasted until the examinations for tubercle bacilli came in.

Trudeau, in his *Life*, says that he picked Baldwin out as a scientist because he came to him saying that he had tuberculosis of the lungs. Trudeau asked him how he knew he had tuberculosis, and Baldwin replied, "because I have demonstrated tubercle bacilli in my sputum." Trudeau took him in and put him at the head of the research department at Saranac Lake, where he

still is. Few men would be called scientists today because they knew how to stain tubercle bacilli.

It is certainly very interesting to think of the changes which the last 50 years have brought in the treatment of tuberculosis and the increased possibilities for recovery that are offered to the patient by the armamentarium we have at the present time with which to handle this very serious disease.

DR. H. E. MICHELSON (Minneapolis) read a paper on "Studies on the Lymphatic Glands in Early Syphilis." Slides of pathological studies were shown.

ABSTRACT

Dr. Michelson reported his studies over the past two years on the superficial lymphatics in early syphilis; his findings were as follows:

1. One hundred and forty-five lymph nodes excised from patients with untreated syphilis were examined.
2. In approximately 27 per cent of the specimens, tuberculoid structure was present.
3. The test with tuberculin, performed on fourteen patients whose glands showed tuberculoid structure, was positive seven times.
4. The luotest was negative when performed on nine patients whose glands showed tuberculoid structure.
5. Tuberculoid reactions found in the lymphatics in early syphilis are variable in type, and apparently the state of allergy is not the same as when this reaction is found in the skin.
6. True gummas of the lymph nodes differ from the tuberculoid structure found in the nodes in early syphilis.

DISCUSSION

DR. J. F. NOBLE (St. Paul) (by invitation): Those of us who are interested in general pathology are particularly grateful to DR. MICHELSON for this and similar histologic studies which he has carried out on dermatologic problems. The general pathologist is lost when it comes to the diagnosis of skin diseases. These lesions, to him, are simple acute or chronic inflammatory processes, and it requires special study such as DR. MICHELSON has given the subject to be able to recognize the finer diagnostic changes.

The microscopic pictures which DR. MICHELSON has shown this evening, are, as far as I can determine, indistinguishable from tuberculosis. Tuberculosis of the lymph nodes shows two types of histologic reaction, the caseating lesion and the proliferative tuberculous lymphadenitis. The gummatous lesions are not likely to be mistaken for tuberculosis.

With reference to the question of allergy, I think DR. MICHELSON is correct in concluding that this type of inflammatory reaction is not characteristic of the allergic state. Rich, Clawson and others have definitely shown that allergic inflammation may vary in degree from a slight proliferative reaction to abscess formation.

DR. MICHELSON's work also brings up the question of the function of the lymph nodes in this type of infection. His work seems to show that the lymph nodes attempt to localize the infection but clinical and experimental data point to the fact that the spirochete promptly passes lymph node filter and the infection becomes generalized.

DR. C. B. WRIGHT (Minneapolis): For my own information, I would like to ask DR. MICHELSON how he excludes the possibility of tuberculosis in these cases. Tuberculosis is a very common disease and many of these cases may have tuberculosis in addition. How do you prove that this is not a tuberculous lesion?

DR. E. M. HAMMES (St. Paul): I would like to ask DR. MICHELSON if these 28 per cent of cases of early syphilis showing this reaction are more or less prone to develop central nervous syphilis later on in life.

DR. MICHELSON (in closing) said he would like to emphasize what Dr. Noble said about the action of the lymphatic glands. It was previously thought that these nodes acted as barriers, but the work of many investigators in experimental syphilis had shown that the adenitis was part of the general reaction to the infection, and that spirochetes could be found in the blood stream, and even in the spinal fluid, before there was any demonstrable lymph adenitis.

In answer to DR. WRIGHT's question, the cases had all been passed upon by Dr. S. E. Sweitzer, and there was no question that clinical syphilis was present. Another strong point against tuberculosis was that when a pa-

tient had a bilateral adenitis which was clinically syphilis, and a gland was removed from one side, and under anti-syphilitic treatment the adenitis subsided, it was a fair presumption that tuberculosis was not present, because colliquative tuberculosis occurring in lymphatic tissue is notoriously slow to respond to any treatment, and heals only after complete elimination of the focus. Stains for tubercle bacilli had been made and were always negative. Dr. Bell also emphasized the point that liquefaction had not been found in any of these specimens.

The question that DR. HAMMES asked is the very one we have put to ourselves: what significance has this finding in a prognostic way? I am sorry to say we are unable to answer.

R. T. LAVAKE, M. D., Secretary.

PROCEEDINGS OF THE MINNEAPOLIS CLINICAL CLUB

Meeting of May 14, 1931

The regular monthly meeting of the Minneapolis Clinical Club was held on Thursday evening, May 14, 1931, in the lounge of the Medical Arts Building. After dinner, the meeting was called to order by the President, DR. F. H. K. SCHAAF, at 7:00 p. m.

After a short business meeting in which amendments to the Constitution and By-Laws were voted upon, the following scientific program was given:

DR. R. T. LAVAKE read a paper entitled "Pre-eclamptic Toxemia of Pregnancy."

The aim of this paper is to stress a clinical observation that I believe to be of the greatest practical importance, namely, the increased likelihood of the accession of pre-eclamptic toxemia of pregnancy coincident with or as a sequel to any type of infection, focal or general.

This observation led me to espouse the infection theory of eclampsia in an article appearing in the October 15, 1916, number of the JOURNAL-LANCET. A continued study of this problem during the past fifteen years had convinced me that this observation is of the greatest practical importance from the standpoints of prophylaxis and preparedness. It directs the clearing up of all focal infection in teeth, tonsils, sinuses, etc., and when infection, focal or general, cannot be avoided, it directs increased care in looking for the earliest signs of pre-eclamptic toxemia. Although no one has been able to prove the infection theory, it is my belief that it will eventually be proved.

I feel that this paper is timely because I have just finished a review of obstetrical literature to date on the subject, have visited many outstanding clinics and have found that it is generally held that the infection theory has been discarded as untenable from the results of investigation, and that the clinical observation of the frequency of the accession of this toxemia upon any type of infection is not made and stressed.

As an example of the practical importance of giving this theory careful attention, let me cite one case among many. A woman normal in every way, whom I had delivered normally twice before, contracted in her seventh month of pregnancy what she designated as a cold. It was apparently so slight an infection that it did not confine her to bed, though it lasted a week and she was quiet during that time according to her physician and herself. Three weeks later her urine was absolutely normal, her blood pressure was 120/60, and she said she felt in perfect condition. However, this history of infection put me on my guard, and a week later, being called up by her and questioned as to the best thing to take for a slight headache, I insisted that I go out to see her. She demurred at this, saying that she and her husband were all dressed to go out to dinner and that my seeing her was unnecessary. I insisted, however, and found her systolic pressure 240. We went to the hospital instead of to the dinner. Labor was induced by bags and the case terminated well. She never had a convulsion, but I felt that early and prompt attention should be given some credit in the result.

Let us use this case as an example for theoretic reasoning, and permit me to describe how I believe infection brings about this condition. It must bring it about through its action upon the fetus or placenta, and it is my belief from observation that it does so by producing alterations in the placenta, generally grossly signalized by infarctions, and that either antolysis of these infarctions causes the toxin, as brought out by Young, of Edinburgh, in 1914, or the alterations in the placenta permit of products being absorbed from the fetus that produce the lesions. The frequent pronounced improvement following intrauterine death of the fetus lends some weight to the latter theory.

Just because we do not know absolutely the cause of this toxemia, do not let us ignore the possible significance of the sequence of infection and toxemia. Especially because, whether right or wrong, it can only act to increase our efficiency.

There are several stock arguments against the infection theory that I would like to mention because they immediately deter many men from thinking further about it. One is that nearly everyone during pregnancy will have either some focal infection or some general infection however slight. Why do not more women have preëclamptic toxemia? One may say the same for rheumatic fever. Has any one yet solved the problem of why one will have joint involvement with a tooth or tonsil infection, and another not? A parallel situation may apply to alteration in the placenta.

Another argument is: The large majority of placentas show some infarction and yet only a small percentage develop toxemia. True, but one must consider that the accession of toxemia depends upon the inability of the excretory organs to take care of the toxin, whatever it may be; and again, from my knowledge of the formation of the placenta, where every cell likely obtains one-half of its proteins from the male side, no two placentas would be alike in their toxicity to the particular mother.

Another argument is that there is no evidence that infarcts are ever the result of infection. They may be just an evidence of an aging organ or the abnormal alteration in a rapidly growing organ. I can merely say that practically every placenta from patients miscarrying or having premature labor in the great "flu" epidemic were filled with infarcts. This phenomenon occurs in miscarriages during every general infection. Careful gross observation of placentas in general infection directs attention to the likelihood of placental alteration due to the infection.

Otherwise why should these placentas show such tremendous infarction compared with placentas from normal cases.

Preëclamptic toxemias also show a greater average infarction. Some of them, when not showing infarction, show local areas of color change that suggest a likely alteration. Whether or not these areas are the beginnings of infarction, I am not prepared to state.

CONCLUSION

No theory of preëclamptic toxemia is of greater practical value than the infection theory. Keep it in mind for practical as well as experimental purposes until it can be absolutely disproved.

DISCUSSION

DR. F. H. K. SCHAAF: Of course, the relation of focal infection to systemic disease is always going to be very much debated, and while we may suspect it as a factor from a clinical standpoint, it will be difficult to prove our views from a pathological standpoint. This is true not only in preëclamptic toxemia but also in myocardial degeneration. Pathologists at the present time do not admit that focal infection can be a factor, but at the same time we see many cases of myocardial degeneration where it is utterly impossible to find any other etiology. I fear there always will be arguments pro and con.

DR. H. B. DORMBLASER: I think this paper is very timely. I enjoyed it very much. On looking through my own records of preëclamptic toxemia, with the idea in mind of an infection as the cause, while not all of the cases had a note to the effect that the patient was suffering from infection, my recollection of some of them was that there had been some focus of infection present, a sinus, bad tooth or something of the sort. When one looks at these cases with the idea of infection in mind, he often finds it is there although it did not seem to be a very big factor at the time. I think it is something obstetricians will have to watch carefully, and the essayist is to be congratulated on his prompt action in seeing the patient who complained of severe headache.

DR. F. W. WITTICH read a paper on "Indications for Therapeutic Abortion in Tuberculosis."

ABSTRACT

The influence of pregnancy on the tuberculous woman was noted in the early centuries. Statistics of various writers are noted showing that pregnancy is one of the leading factors, that in 30 to 40 per cent of married women pregnancy was responsible for lighting up an inactive process, and that the disease proved fatal in about 30 per cent. The death rate is higher the closer the period between the disease and the pregnancy and the more advanced the disease. Tuberculous women having sanatorium training do not become pregnant as often as normal women. Post partum hemorrhages occurred in a very large proportion of the tuberculous women.

No bad effects were noted after 80 artificial abortions noted among the discharged Trudeau Sanatorium cases reported by Matthews and Bryant, and a few onsets and recurrences occurred after some of the 101 spontaneous abortions noted by them. Of their series 71 per cent of those who bore living children nursed their babies in spite of the general teaching against nursing by tuberculous women.

The writer studied a group of 515 definitely active cases of tuberculosis among women of all ages and stages of the disease from his private files between the years 1917 and 1931. 178 gave histories of having one child or more, of whom 95 are living and 83 are dead. Of 337 who gave a history of never having been pregnant, 169 are living and 168 are dead. Very little difference was noted between the number of deaths in the maternal and the nonmaternal groups, although this is influenced by the fact that among this series were a comparatively large number of young women between the ages of 15 and 25 years who were never pregnant, and who had rather an acute advanced stage at the first examination, where the disease was advanced beyond the stage where collapse therapy could be done, whereas the older maternal group presented more of the fibroid type, more limited in extent, and where artificial pneumothorax played an important factor in prolonging life. There were 23 induced abortions in the entire series, 5 of whom are dead, 16 living, and 2 untraced.

Abortions should be decided upon before the third month, or as early as possible, and never later than the fifth month. The active early cases are the most suitable and the moderately advanced less so. In cases complicated by hyperemesis or laryngeal tuberculosis, abortion should be done in the early months. Artificial abortion should never be done on a tuberculous suspect, and collapse therapy in some form should be considered in all cases. The acuteness and rapidity of spread of the disease should be considered, as abortion influences very little cases with a rapid recent spread. Artificial abortion should not be done in any case unless the patient can have excellent care and undergo the strictest and accepted antituberculosis measures, preferably in a sanatorium.

As the indications for such a procedure become more complicated, where the symptoms, physical signs, X-ray, and knowledge of collapse therapy play an important role, it should be required of every tuberculous pregnant woman to have the benefit of the roentgenologist and the internist versed in the special therapeutics of

tuberculosis, as well as of the obstetrician. A thorough chest examination and, if possible, X-rays should be taken of every prospective mother as a routine prenatal procedure.

DISCUSSION

DR. R. T. LAVAKE: This is a very timely paper. It has always seemed to me, in this question of tuberculosis and pregnancy, that the whole thing from beginning to end hinges on the questions of the perfection of sanatorium or sanatoriumlike treatment, of how much you can protect the patient from work at the time of labor, and of how well you can keep the affected lung immobilized. I haven't had experience with phrenicotomy, but that seems to offer the best solution to this problem. I have never seen a case where pregnancy seemed to interfere with the well-being of the woman; in fact, it has always seemed to me she has felt better from the pregnancy, after the first three months, than she had ever felt before. The circulation of the extremities is bettered as a rule. I believe that pregnancy improves the general well-being of a woman. The same applies to the tuberculous woman, but the danger lies after delivery when you change the position of the diaphragm which is practically in the position that it is after phrenicotomy; it is suddenly allowed to come down, and that just shoots the tubercle bacilli through the lungs. The reason, in my opinion, why abortion should be under the first three months is that there is no disturbance of the diaphragm and no muscles are brought into play. They do lose a little blood at times, but not always a great deal. Personally, I believe that a woman who has had active tuberculosis within two years, if seen within the first three months, should be advised to have the pregnancy terminated. Of course the religious factor and her own desires must be taken into consideration. If she goes to delivery I think she should have a phrenicotomy or a pneumothorax, and one can do a Cesarean under local if necessary to prevent all effort. The vital capacity of the lungs is the same at the time of delivery but the lungs are flattened from above downward. As soon as the pregnancy is ended, the diaphragm falls and the lungs resume their normal shape. I think that a phrenicotomy or a pneumothorax is advisable. I have not used them, but have always advised putting a pillow over the uterus after delivery, thus attempting to hold the diaphragm up. I believe that if we could absolutely prohibit the change in the diaphragm or the mechanics of the lung, the woman should have no trouble at all. She should, however, be at a sanatorium and under the best care.

DR. H. B. DORNBLASER: I was very much interested a week or so ago in attending a meeting at Glen Lake Sanatorium in which Dr. Jennings reported their statistics for the last ten years on thirty-five cases of pregnancy in the tuberculous patient. At first they picked them very sparingly, but have come to the conclusion that they can carry nearly any with tuberculosis through a pregnancy. His statistics in the early cases were about the same, whether the case was aborted or allowed to go to term. They felt they had not gained much by aborting them early. The majority of the women they have taken through their pregnancies, and their tuberculosis was in no way advanced. They do suggest, however, that the woman should be given as easy a labor as possible, and should have the best possible care for the tuberculous patient afterwards, i. e., should be in bed for at least three months and go on

a cure, and also that the baby should not nurse. I have a patient now who has an active tuberculosis and insists on going through her pregnancy. When I first saw her I thought it was suicidal to do it. She had been a patient at Glen Lake. She says that as soon as the delivery is over she will take a cure either at home or at Glen Lake.

DR. F. H. K. SCHAAF: It seems to me that we have to consider each case individually and make a decision accordingly. Firm and fixed rules cannot be formulated for any therapeutic procedure.

DR. LAVAKE: In the case of Dr. DORNBLASER just mentioned, if I may offer a suggestion, when that woman is delivered I certainly think she should have a pneumothorax or phrenicotomy or she may not get to the sanatorium. When that diaphragm comes down it is too late, but with either of these procedures there is less chance of that happening. I have seen cases, apparently well at an easy delivery, cough up a teacup full of pus filled with tubercle bacilli a few days later and die within a few weeks. I don't think that would occur now with the means at hand for lung immobilization.

DR. J. M. HAYES: I would like to ask if Dr. DORNBLASER's case is bilateral tuberculosis?

DR. DORNBLASER: Yes.

DR. E. S. FLATOU: Are all cases of pulmonary tuberculosis with pregnancy suitable for immobilization, and when is the optimum time for such immobilization?

DR. R. C. WEBB: Are there any objections to phrenicotomy, or would it be preferable to crush the phrenic nerve and let it recover at a later date?

DR. WITTICH: I think, but am not positive, that Dr. Kinsella just crushed the nerve in some of his earlier cases, but I do not see why it should not be pulled out to get as much fixation of the diaphragm as possible.

DR. WEBB: Then you don't do phrenicotomy as a prophylactic measure; but should it have been done before?

DR. WITTICH: It should have been done previously, perhaps, if the disease had been detected before the pregnancy where this procedure was indicated, but the pregnancy may be the only indication for phrenic exeresis. It is rather difficult to get the patient's consent sometimes, and then again many physicians are not familiar enough with the procedure to realize its importance in these cases. Personally, I prefer to do pneumothorax if possible, taking the side having the most disease, when the lung can be allowed to reexpand if results are not obtained, or there is increased activity in the opposite lung. Phrenic exeresis is a permanent thing and this may not always be desirable.

DR. E. T. EVANS: On the other hand you have had a period of four months in which it was doing some good.

DR. WEBB: If phrenicotomy is better why would you even consider pneumothorax unless you had some objection to phrenicotomy?

DR. WITTICH: Pneumothorax has always seemed a simple procedure to me. Besides a phrenicotomy is far from the satisfactory collapse that a pneumothorax will give; the former, however, is certainly a most valuable procedure when indicated.

DR. LAVAKE: It would seem to me that phrenicotomy would be better, then you could do a Cesarean, and I do not think it would hurt the woman at all.

DR. WEBB: I think some years ago Dr. WITTICH read a paper on the relation of vital capacity to post-operative risk. Can a patient hold the breath as long after phrenicotomy as before?

DR. WITTICH: No, but the vital capacity gradually approaches its former level.

DR. WEBB: Then you would prefer pneumothorax because the lung comes back afterwards, while with phrenicotomy you have lost the action of the diaphragm?

DR. LAVAKE: One thing which has not been brought out and which seems to be a very wise thing, is that in every case that has had tuberculosis within two years the patient should be given advice not to become pregnant until the lesion is entirely gone. I do not believe they get such advice.

DR. PLATOU: It is true that some women never suspect they have had tuberculosis and after having a baby break down with rapidly progressing tuberculosis.

DR. LAVAKE: I think Dr. WITTICH mentioned there were about 33 per cent.

DR. PLATOU: Don't you think that is a good argument for a very careful study of the patient who becomes pregnant, with at least one routine chest plate during her course?

DR. LAVAKE: I am of the opinion that that diaphragm must never move once. One case was very interesting to me. This woman had aborted twice by herself. I think every woman who has aborted should be gone over by an internist to find out if she has a focal infection. The third time she did not abort. She was a patient of Dr. Bell and we went over her very carefully and then advised abortion. She refused, went out to Colorado, and died three weeks after delivery.

DR. F. W. WITTICH reported the following case and showed the two complete specimens of diphyllobothrium latum or fish tapeworm. These specimens were passed by a native born Jewish woman sixty-five years of age after vigorous antihelminthic treatment. She had had a moderate diabetes mellitus for about five years, and four years ago entered the hospital where she underwent treatment for worms, but the physician failed to get the heads. There were little or no symptoms. She presented a moderate secondary anemia. Attention is here called to Dr. Moses Barron's excellent paper in the *Journal of the American Medical Association* of May 11, 1929, reporting nineteen cases among native born Americans, four of whom were his own cases. He calls attention to the fact that the majority are Jewish, and mostly women, who are accustomed to tasting from time to time, for proper seasoning, the raw minced fish while preparing the commonly used Jewish dish of "gefüllte Fisch." The woman gave this history. She had frequently tasted the raw minced fish in the preparation of this dish.

The one specimen shown is eighteen feet long and the other seven feet long. These worms are often eight meters in length. Attention is called to the lateral slit in the head and to the split tails.

It is noted that, besides man, the dog, cat and fox have been found to be infested; that there are two intermediary hosts, the first larval stage developing in infested crustaceans from ova discharged in the stools, and the second larval stage in the body of the fish from ingesting infected cyclops, or from eating infected young fish.

Magath and others have shown that some of the northern lakes of Minnesota are heavily infested, especially the pike and pickerel. The larval worms are also seen in carp.

The treatment in this case was as follows: For three days before entering the hospital, the patient ate lightly of milk, milk toast, cereals, broth, and coffee. On each of these days she was given a tablespoonful of a solution of Epsom salts containing spirits of chloroform 15 cc. and 60 grams of magnesium sulphate to 200 cc. of water, three times daily before meals. The night before entering the hospital a double dose of the salts mixture was given and a soap and water cleansing enema, and the patient took no food and but little liquid. The patient entered the hospital before 9 o'clock the next morning, when four 0.5 gm. capsules of oleoresin aspidii were given. This dose was repeated at 10 o'clock. The capsules were uncapped before giving. At twelve o'clock three tablespoonfuls of the salts mixture were given to prevent absorption of the male fern.

The patient remained in bed the entire day, taking only some black coffee and a little bouillon during the morning. In the afternoon the patient was given a light diet. All specimens were carefully searched by straining through gauze, and a final high cleansing enema was given that night.

H. BRIGHT DORNBLASER, M. D.,
Secretary.

MISCELLANEOUS

The Montana State Meeting

The fifty-third annual meeting of the Medical Association of Montana was held at Bozeman, Mont., July 8-9, 1931.

There was a total registration of 118 and it was commented upon as the biggest and best meeting of the State Association since the war.

Dr. E. R. Grigg of Bozeman gave the address of Welcome for the Gallatin County Medical Society of which he is the President.

In his address of welcome Dr. Leroy Southmayd of Great Falls urged the necessity of every physician doing his part of public welfare work and loyalty co-operating along progressive lines rather than opposing progress. He deplored the lack of funds by the State Board of Medical Examiners, and recommended that the Association set aside a sum of money that might be drawn upon

by such Board in case it should become necessary to prosecute offenders.

One of the most interesting papers was that on Early Montana Medical History by Dr. H. W. Grigg, of Butte. It dealt with the observations of the Lewis and Clark expedition as recorded in their diaries. Peculiar afflictions of the Indians were referred to and the ailments of individual members of the exploring expedition was often given in great detail. Anecdotes and characteristic expressions from the pioneer physicians that first located in this territory were related and much was found to be admired in these stalwarts of the frontier days. It is to be hoped that the Historical Committee may be successful in accumulating and preserving these early records for coming generations before it is too late. The discussion that followed would indicate that much of this history has come down by word of mouth and there should be no further delay to get it into permanent form. The LANCET would be glad to co-operate.

Other out-of-state visitors and speakers were Dr. Henry Schmitz of Loyola University, Chicago; Dr. George F. Suker, also of Chicago; Dr. Raymond E. Watkins, Portland, Oregon, and Dr. A. E. Hedback, Minneapolis, Minn.

Dr. J. H. Garberson, Miles City, is now the president of the Association; Dr. J. F. Blair, Bozeman, vice president; Dr. E. G. Balsam, Billings, re-elected secretary-treasurer; Dr. C. T. Pigot, Roundup, delegate to the national convention.

Dr. Charles S. Houtz, Havre; Dr. L. G. Dunlap, Anaconda, and Dr. B. L. Pampel, Livingston, were chosen councilors, and the next annual meeting will be held at Miles City, July 1932. Montana will continue to write medical history with the magic pen of 1931-32.

Northern Minnesota Medical Meeting

A varied program of scientific and social events is already scheduled for the Northern Minnesota Medical Association meeting to be held at Hibbing, on Monday, September 14, 1931.

A trip into the open pit of the mine, a tea for Auxiliary members, and a golf tournament are among the events.

Scientific sessions will be held at the Androy Hotel. The first will be a clinico-pathologic conference by Dr. M. M. Fischer, internist; Drs. G. L. Berdez, pathologist; Gage Clement and J. R. McNutt, roentgenologists with discussions led by Dr. E. L. Tuohy, all of Duluth. Dr. L. R. Gowan, Duluth, will read a paper on "Multiple Sclerosis," and Dr. O. W. Rowe, Duluth, will talk on "Pediatrics."

Drs. D. C. Collins and John S. Lundy, Rochester, will talk respectively on "Peptic Ulcer," and "Modern Phases of Anaesthesia." Dr. A. M. Snell, also of Rochester, will talk on "What the American Doctor Sees in Europe." Dr. Thomas Myers of St. Paul will talk on "Pathology of the New Born," and Dr. W. H. Hengstler also of St. Paul on "Remote Effects of Head Injuries." Dr. N. O. Pearce, Minneapolis, will repeat the paper, with slides, on Medical Economics, which he gave at the State meeting in May.

Dr. M. S. Henderson, Rochester, President-elect of the Minnesota State Medical Association, and a mining engineer recently returned to America from Russia will appear on the evening program.

Dr. B. S. Adams, Hibbing, and Dr. E. K. Smith of Duluth are in charge of the program.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. W. J. Benjamin, Pipestone, Minn., has returned from a several months vacation in Europe.

Dr. Otto Klein, formerly of Chicago, has joined the staff of the Thompson Clinic at Helena, Mont.

Dr. Chas. J. King, physician and surgeon, has opened new offices at Wales, N. D., for general practice.

Dr. T. Cruickshank, Vermilion, S. D., is taking a sixty day post-graduate course at Chicago this summer.

Dr. L. L. Laugeson, Cando, N. D., has been re-elected county surgeon for Tower County, North Dakota.

Dr. A. E. Henderson, Bemidji, Minn., one of the pioneer physicians of that city, died recently at the age of 75 years.

Dr. C. Demarree, who has been located at Woonsocket, S. D., for several years, has moved to Hopkinton, Iowa.

Dr. G. Roy Ringo has returned to Minot, N. D., and will resume active practice after an absence of several years in California.

Dr. Geo. E. Whitson, formerly located at Colman, has moved to Madison, S. D., and has opened offices for general practice.

Dr. M. W. Garrison, a recent graduate of the Medical School of Nebraska, has opened offices for general practice at Minot, N. D.

Dr. J. G. Halland, a recent graduate of the University of Minnesota, has opened offices for general practice at Deer Creek, Minn.

Dr. Walter E. List, formerly superintendent of General Hospital, Minneapolis, is back among his many friends for a few days' visit.

Dr. E. W. Cooley, a practicing physician in Blooming Prairie, Minn., for over 40 years, died recently after an illness of several months.

Dr. J. M. Hofto, formerly located at Ray, N. D., has moved to Grand Forks, and is associated with Dr. Olaf Bentzen in general practice.

Dr. Hiram C. Bear, who has been in active practice at St. Charles, Minn., for over forty years, died last month at the age of 69 years. He had been confined to a local hospital for several months, having suffered a paralytic stroke.

Dr. L. T. Sussex, recently of the Mayo Clinic, Rochester, is now located at Havre, Montana, where he has opened offices for general practice.

Dr. T. T. Warham succeeds Dr. R. R. Noice, as County Physician of Hennepin County. Dr. Warham occupied this same position from 1908 to 1922.

Dr. W. C. Brinkman, Minneapolis, has purchased the equipment and practice of Dr. C. R. Senescall, Vebien, S. D., and is now in active practice.

Dr. W. A. Allen, Austin, Minn., one of Minnesota's oldest physicians continues in active practice, not missing a day in calling on his patients.

The annual meeting of the Southern Minnesota Medical Association will be held on August 24th at Faribault. A very interesting program is being arranged.

Dr. A. Stolinsky, Sheldon, N. D., has been spending several weeks in St. Louis, Mo., where he attended the leading clinics of that city in post-graduate work.

Dr. W. G. Benjamin, who has been spending several months traveling in Europe, has returned to his home and again resumed active practice at Pipestone, Minn.

Dr. and Mrs. Roy V. Morledge, Billings, Mont., have returned from a three months' European trip. Dr. Morledge spent most of his time in post-graduate work.

Drs. Frank I. Darrow and Robert B. Bray, Fargo, have been licensed as pilots for their airplanes. Both of the Doctors have been owners of planes for several years.

Dr. G. W. Potter, Redfield, S. D., who has been seriously ill for several weeks, being confined in a Minneapolis hospital, has returned home and is now improving rapidly.

The Wright County, Minn., Medical Society held their July meeting at Delano, with Dr. Owen Wagensteen, Minneapolis, and Dr. J. L. Lee, Watertown, the principal speakers.

The Montana Public Health Association have elected the following officers for the coming year: Dr. E. D. Hitchcock, Great Falls, president, and Dr. W. F. Cogswell, Helena, secretary.

The St. Bernards Hospital at Milbank, S. D., is in a very prosperous condition under the care of the following staff of officers: President, Dr. D. A. Gregory, Milbank; vice president, Dr. T. A. Hedemark, Revillo, and secretary-treasurer, Dr. F. N. Cliff, Milbank.

Dr. A. E. Hedback, of the editorial board of the *Journal-Lancet*, was among the visitors at the annual meeting of the Montana State Medical Society held at Bozeman, Mont., last month.

Dr. and Mrs. William F. Braasch of Rochester, Minn., announce the engagement of their daughter, Miss Marion, to Dr. James Watson of Pittsburgh. The wedding will take place in September.

Dr. A. W. Robertson, who has been in active practice at Litchfield, Minn., for many years, died last month after a short illness. Dr. Robertson was well known among the profession of Central Minnesota.

Dr. J. J. O'Hara, who has been in active practice at Waseca, Minn., for over thirty years, died recently of heart trouble. Dr. O'Hara has always taken an active part in the civic affairs of his home county.

The Wabasha County, Minn., Medical Society held their sixty-third annual meeting at Lake City last month. Prof. T. S. Roberts, of the University of Minnesota Medical School was the principal speaker.

Plans for the development of the General Hospital, at Minneapolis, is now under way. If the financial end of the deal can be worked out satisfactorily, a 23 story tower on the present property will be erected.

Dr. and Mrs. O. Henry have returned from a four months' European trip. Dr. Henry attended the meeting of the German Surgical Society in Berlin, and the French Orthopedic Society at Berck-Plage and the British Orthopedic Society at Aberdeen, Scotland.

Dr. and Mrs. O. Henry, Minneapolis, have returned from a four months' European trip. Dr. Henry attended the meeting of the German Surgical Society in Berlin, and the French Orthopedic Society at Berck-Plage and the British Orthopedic Society at Aberdeen, Scotland.

Dr. S. A. Slater, Worthington, Minn., Superintendent and Medical Director of the S. W. Minnesota Sanatorium, returned home Monday, July 20th, after having spent two months visiting the principal medical centers of Great Britain and Europe.

Dr. O. D. McCartney, for many years in active practice at Williston, N. D., has been confined to his summer home following an operation that was successful and the Doctor will soon gain his former good health, but he will not resume practice.

Dr. H. D. Benwell, Grand Forks, N. D., has returned from a year's sojourn in Europe and has resumed active practice. Dr. Benwell was in Edinburg, Scotland, for eight months, and Vienna for four months, visiting the leading clinics and hospitals of those cities. Mrs. Benwell and daughter were with him on the trip.

The annual meeting of the Southern Minnesota Medical Association will be held at Faribault, August 24. The program this year will be similar to the one given last year in that clinical demonstrations and clinics will be held in the morning with a formal program in the afternoon and a banquet with prominent speakers in the evening.

At the annual meeting of the Wabasha County, Minn., Medical Society held at Lake City last month, Dr. W. F. Wilson, who has been the active and hard working secretary for the past 35 years, was honored by being elected president for the coming year. Dr. W. B. Stryker, Plainview, vice-president, Dr. R. H. Frost, Wabasha, secretary. Delegates to State meetings, Drs. H. E. Bowers, Lake City; D. B. Dempsey, Kellogg. Censors, Dr. W. J. Cochrane, Lake City; Dr. J. F. Bond, Wabasha, and Dr. J. A. Slocumb, Plainview.

Every physician should be familiar with the resolution passed by the House of Delegates of the American Medical Association on Veteran's Legislation, especially if he lives in a community where there are War Veterans in need of medical services and care. The complete text may be found on pages 2115 and 2116 of the *Journal of the American Medical Association* in the issue of June 20, 1931.

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, has issued 16 licenses to the following list to practice medicine and surgery in that state: O. Harold Muus, Grand Forks; M. W. Garrison, Minot; Arthur C. Fortney, St. Paul; Edwin H. Boerth, Bismarck; Clarence G. Owens, Fargo; Edwin B. Bannister, Grand Forks; Ernest L. Grinnell, Grand Forks; Lawrence N. Serhus, Williston; James W. Simpson, Gretna, Manitoba; W. J. Pangman, Wahpeton; Victor A. Mulligan, Langdon; Charles B. Owston, Grafton; Floyd E. Wolfe, Oakes; George C. Foster, Fargo; George T. Murphy, Oakes; Rudolph O. Griess, Jamestown.

CLASSIFIED ADVERTISEMENTS

Location Desired

Young physician desires location. Address Box 849, care of this office.

Wanted

Physician and dentist to share downtown office with well established surgeon. Address Box 851, care of this office.

Location Wanted

Physician, 25 years experience, seeks office association with an established physician or surgeon practicing in Minneapolis. Address Box 845, care of this office.

Wanted to Buy for Cash

Used equipment, in good condition for a 20-bed hospital. Including beds, tables, operating tables, sterilizers, etc. Itemize what you have, giving prices on whole or part. Address box 843, care of this office.

Wanted

Young, single Protestant man who has had internship, to help in general practice and private Hospital in Southern Minnesota. \$175.00 per month to start, including room and board in Hospital free. Everything furnished. Address Box 847, care of this office.

For Sale

Diathermy Fisher, as good as new, costs \$650.00, will take \$300.00. Basal Metabolometer, nearly new, costs \$190.00, will take \$100.00. Both these instruments will be crated F. O. B. my town in South Dakota. First come, first served. Address Box 848, care of this office.

Position Wanted

Laboratory and x-ray technician, graduate of x-ray and laboratory technicians training course of a St. Paul hospital, desires position in Hospital or Clinic. Experience, one year in clinic in South Dakota. Good references. Address Miss V. Norquist, 907 11th St., Rapid City, S. D.

For Rent

Desirable office space in brand new modern building on busy business and street car intersection in South Minneapolis. Waiting room is shared by busy dentist, established seven years on corner. Doctors' offices are occupied at present, but owing to other appointments they will be available for rent August 1st. Long lease. Office is equipped. Rent reasonable. Competition light. For information address Box 850, care of this office.

For Rent

Doctor's office occupied by prominent physician. Office elegantly equipped. Individual treatment room, laboratory, etc. Reception room is shared with dentist and other physician. A new up-to-the-minute medical building, located in one of the best business intersections of good residential district. This is an unusual proposition and must be seen to be fully appreciated. Address Box 837, care of this office.

Practice for Sale

Growing practice in southeastern South Dakota, city of 7,500, new 150 bed hospital. Complete office equipment with laboratory. Splendid equipped x-ray and physiotherapy departments in building under your supervision. Am leaving to do post graduate

work. Chance to make part or all office rent assisting in surgery. Wonderful for man starting out. Must be cash deal. Address Box 852, care of this office.

BOOK NOTICES

THE SURGICAL CLINICS OF NORTH AMERICA. October 1930. Volume 10, No. 5. Pacific Coast Surgical Association Number. Philadelphia: W. B. Saunders Co.

The clinics in this volume have been contributed by thirty-three fellows of the Pacific Coast Surgical Association, which includes the West Coast States, British Columbia, and Hawaii. The volume contains reports of well selected, interesting, and some unusual cases, by men who are well known to the profession. The accounts, brief as a rule, are well presented and give the salient points.

It is difficult to single out the cases that are outstanding and of special value. They cover a wide range and include such clinics of surgical interest as the brain, ear, thyroid, vessels, lymphatics, stomach, pancreas, gall bladder and liver, intestines, spine, genito-urinary apparatus, female pelvic organs, bones, and induction anesthesia.

The reports are well edited and the cases are presented in an interesting, attractive manner. The volume is well illustrated and is a credit to the Association and the individual members participating.

A. E. BENJAMIN, M. D.

THE SURGICAL CLINICS OF NORTH AMERICA (December 1930). Philadelphia, W. B. Saunders Company, 1930.

This volume is one consisting of clinics by some of the best surgeons of Philadelphia. Among them is Deaver, on "Cancer of the Rectum." He includes most of the known symptoms and points in the diagnosis of cancer of this part of the alimentary canal, and stresses particularly the early diagnosis as the means of cutting down the mortality rate. Jackson gives the details of the delicate operative method of diverticula of the esophagus. Babcock emphasizes the danger of air embolism in intrapleural operations and the method of avoiding this complication. The causes and diagnosis of pathological fractures and their treatment is well handled by Eliason and Wright. Several illustrations emphasize these fractures. The early diagnosis and various forms of treatment of intestinal tumors is summed up in an interesting clinic by E. J. Klopp. The article is well illustrated. The "Neurosurgical Clinic" by Temple Fay, of the management of tumors of the posterior fossa by the transtentorial approach, was very interesting and instructive. The "Roentgenological Clinic" by Eugene P. Pendergrass, and the one by Edward T. Crossan on fracture of some of the bones of the foot, also the one on osteomyelitis by Ryan are all worthy of mention. There is a report of a clinic, especially interesting to the oral surgeon, on the newest forms of treatment of fracture of the mandible, by Ivy and Curtis. The clinic of John H. Jopson on "Open Safety Pin in Duodenum," "Carcinoma of the Colon," and the "Keller Method of Treatment of Chronic Empyema"; the clinic of John Berton Carnett on "Subacromial Bursitis," "Anal Sphincterismus as Cause of Constipation," "Gynandrous Pseudohermaphroditism," and "Intercostal Neuralgia"; the clinic of George

THE JOURNAL-LANCET

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Minnesota, North Dakota, South Dakota, and Montana
The Official Journal of the
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TRANSACTIONS OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION FIFTIETH ANNUAL SESSION—1931

ABERDEEN, S. D.

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SOUTH DAKOTA STATE MEDICAL ASSOCIATION

STANDING COMMITTEES

CHAPTER VII, SECTION 2 SCIENTIFIC WORK

J. B. GREGG, M. D., 1933..... Sioux Falls

B. H. SPRAGUE, M. D., 1934..... Huron

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PUBLICATIONS SECTIONS 4 AND 6

THE COUNCIL

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T. F. RIGGS, M. D., 1933..... Pierre

S. M. HOHF, M. D., 1934..... Yankton

MEDICAL EDUCATION AND HOSPITALS SECTION 6

J. C. OHLMACHER, M. D., 1932.....	Vermilion
H. T. KENNEY, M. D., 1933.....	Watertown
N. T. OWEN, M. D., 1934.....	Rapid City

MEDICAL ECONOMICS SECTION 7

D. A. GREGORY, M. D., 1932.....	Milbank
H. W. SHERWOOD, M. D., 1933.....	Doland
J. M. WALSH, M. D., 1934.....	Rapid City

HYGIENE

G. ZIMMERMAN, M. D., 1932.....	Sioux Falls
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F. N. CLIFF, 1934.....	Milbank

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J. D. WHITESIDE, M. D., 1934.....	Aberdeen

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W. G. MAGEE, M. D.....	Watertown

MADISON DISTRICT NO. 3

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W. H. SAXTON, M. D.....	Huron
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W. J. MAYTUM, M. D.....	Alexandria

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ALTERNATE

G. V. JAMIESON, M. D.....	DeSmet
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WHETSTONE VALLEY DISTRICT NO. 12

H. C. PEABODY, M. D.....	Webster
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FIRST MEETING OF THE COUNCIL

Monday, June 1, 11:00 P. M.

The Council convened following the adjournment of the House of Delegates.

The meeting was called to order by Chairman Dr. Fred Treon. Roll called with the following members present: Chairman Dr. Fred Treon, Drs. Percy D. Peabody, M. C. Johnston, H. W. Sherwood, C. E. Sherwood, A. A. McLaurin, E. B. Taylor, A. S. Rider, H. R. Kenaston, A. E.

Bostrom, Chas. Flett, L. N. Grosvenor, and J. F. D. Cook.

Dr. N. T. Owen, on motion, was seated for the Ninth (9th) District.

Secretary Cook presented his financial report. (See detailed report, House of Delegates.)

The Chairman appointed as an auditing committee: Drs. E. A. Pittenger, A. S. Rider, A. A. McLaurin.

J. F. D. COOK, M. D.,
Secretary-Treasurer.

SECOND MEETING OF THE COUNCIL

June 4, 1931

Called to order by Dr. Fred Treon, Chairman, at 11:45 a. m., Sacred Heart School.

Motion to seat Dr. S. M. Hohf representing Dr. J. A. Hohf of Yankton District as Councilor.

Secretary Cook called the roll. The following officers present: Dr. P. D. Peabody, President, and Drs. W. A. Bates, J. R. Westaby, J. F. D. Cook, Secretary; M. C. Johnston, H. W. Sherwood, C. E. Sherwood, A. A. McLaurin, E. B. Taylor, Fred Treon, A. S. Rider, S. M. Hohf, N. T. Owen, H. R. Kenaston, A. E. Bostrom, L. N. Grosvenor.

Election of Secretary. Chairman Treon called for nominations. Dr. A. A. McLaurin nominated Dr. J. F. D. Cook. Dr. A. E. Bostrom nominated Dr. E. T. Ramsey. On motion nomination closed. Tellers were appointed by Chairman. The first ballot was as follows nine (9) for Dr. J. F. D. Cook, six (6) for Dr. E. T. Ramsey. Chairman declared Dr. J. F. D. Cook elected Secretary for three (3) years.

Dr. N. O. Ramstad of Bismarck reported the action of North Dakota Council regarding the Journal-Lancet. That North Dakota appointed a committee to confer with a like committee from South Dakota to investigate the Journal-Lancet.

The Council concurred. W. A. Bates, M. D., S. M. Hohf, M. D., M. C. Johnston, M. D. Adjourned.

J. F. D. COOK, M. D.,
Secretary.

FIRST MEETING OF THE HOUSE OF DELEGATES

June 1, 1931—8:30 P. M.

The meeting was called to order by President Percy D. Peabody. Secretary J. F. D. Cook called the roll. Following members present: Drs.

E. A. Pittenger, B. M. Hart, W. A. Saxton, W. R. Ball, A. S. Rider, G. R. Albertson, W. J. Matousek, G. V. Jamieson, Chas. Flett, M. C. Johnston, H. W. Sherwood, C. E. Sherwood, A. A. McLaurin, E. B. Taylor, Fred Treon, H. R. Kenaston, A. E. Bostrom, L. N. Grosvenor, W. A. Bates, J. R. Westaby, P. D. Peabody, and J. F. D. Cook.

A quorum being present the House proceeded with the order of business.

Communication received certifying Magni Davidson as delegate for District No. 3. Magni Davidson was seated as a duly certified delegate.

Communication from the Black Hills Secretary certifying Dr. J. L. Stewart and Dr. J. O. Threadgold. Dr. J. L. Stewart was seated as a delegate. The membership in the Black Hills District entitling them to one delegate.

Communication from the Secretary of the Black Hills District certifying Dr. N. T. Owen elected by the Black Hills District as Councilor in place of Dr. R. J. Jackson from the Black Hills Society.

The Secretary called the attention of the House of Delegates to the Constitution and By-Laws. Election of officers in Chapter 4, Section 1. The Councilors are elected by the House of Delegates of the State Medical Association. The Component or District Societies do not elect the Councilors.

Motion by Dr. L. J. Pankow, seconded by Dr. E. A. Pittenger, that Dr. N. T. Owen act as Councilor at this session, representing the Black Hills District in place of Dr. R. J. Jackson who was absent. Motion carried.

Reading of the minutes of the 1930 session. Motion made that the reading of the minutes be dispensed with as they were published in the Journal-Lancet. This motion prevailed.

Report of the Secretary-Treasurer.

TO THE MEMBERS OF THE HOUSE OF DELEGATES
OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION:

The following report of your Secretary is respectfully submitted to the House of Delegates:

MEMBERSHIP

The enrollment of membership of the Association on May 29, 1931, as follows by Districts:

Aberdeen District No. 1	44
Watertown District No. 2	25
Madison District No. 3	15
Pierre District No. 4	8
Huron District No. 5	21
Mitchell District No. 6	28

Sioux Falls District No. 7.....	37
Yankton District No. 8.....	37
Black Hills District No. 9.....	15
Rosebud District No. 10.....	9
Kingsbury Co. District No. 11.....	8
Whetstone Valley District No. 12.....	15

Total, 262. Decrease over last year.

Economic conditions are evidenced by the decrease in membership, removal from State. However, the new class before the Board of Medical Examiners for July, 1930, to January, 1931, make good material to induct into the District Societies. The Councilor and Secretary of District should make contact with these new men.

There have been 11 deaths reported to this office during the year. Of this number, one past president, Dr. T. B. Smiley of Mount Vernon. The following were members of the State Association: Drs. Burtis T. Green, Brookings; Geo. Wm. Launspach, Huron; John Frederick Miller, Andover; Edwin Wilson Pickard, Bonesteel; Edmond Newell Nelson, Watertown; Thos. Benj. Smiley, Mt. Vernon, and Frank Arthur Swezey, Wakonda.

Also the following practitioners of the State: Drs. Neil Alden Bright, Hudson; Johnson J. Glazier, Springfield; Albert Sherrill, Belle Fourche; Wm. Jos. Webster, Vivian, and T. G. Thompson, Sioux Falls.

The Committee on Necrology have formulated and will present proper resolutions respecting this list.

REPORT

By J. F. D. Cook, M. D.

Secretary

THE ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

Headquarters of A.M.A., Chicago, Ill.

November 14-15, 1930

MEMORIAL FOR PHYSICIANS WHO SERVED IN THE WORLD WAR

The minutes of the Board of Trustees of the American Medical Association, held November 13-14, 1930, found on page 1746, December 6, 1930, issue of the Journal. This is lengthy and is too long to include in this report.

I wish to call to the attention of the Committee on Economics and to the "White House Conference and Child Health and Protection Pro-

gram," which is found on page 1765 of the December 6, 1930, issue of the Journal, and the editorial comment on the same on page 1746. Committee on Medical Economics should carefully go over this material and make recommendations to the House of Delegates for the guidance of the officers of the Association.

The Annual Conference of Secretaries of Constituent State Medical Associations held at the headquarters of the American Medical Association, Chicago, Illinois, November 14-15, 1930, William Gerry Morgan, President of the American Medical Association, presiding. Dr. Morgan presented the program of the Paris Memorial Building (page 1746) an appeal to the medical profession, asking that they give their moral and financial support to this very worthy enterprise.

Services to the indigent, through the contract, to the County Medical Society, was ably presented by Dr. R. L. Parker, Des Moines, Iowa. An outline of this program, as carried out in Iowa, has been forwarded the House of Delegates. From reports this plan has been very satisfactory to the medical profession of Iowa and the officers of the various counties in which it has been introduced. The County Society is the only bidder, and where the county is 100% in its membership, it works out well. I feel that this program has worked so satisfactorily in Iowa that it is worthy of our consideration.

Doctor Elliot Carr Cutler of Cleveland, Ohio, presented some very interesting facts relative to anti-vivisection legislation. National and State. From this report the anti-vivisectionists are attempting to enact prohibitive measures through the national government that will prohibit the use of the dog for experimental purposes. If they should be successful in procuring national legislation this would only be the entering wedge looking toward each state adopting similar anti-vivisection laws. He urges that the medical profession present the scientific side of this problem. That they make their statements to the effect that no other animal could be used in the development of insulin by banting. That the dog lives under similar conditions and subject to similar diseases as man. The development of liver feeding in anemia would have been impossible on any other animal. This type of argument presenting scientific facts has a better effect on the open-minded legislator rather than argumentative or controversial type. He also states that in preparing papers for publication the essayists should be very careful of the pictures for publication. That editors of medical

Journals should be very careful and delete all ultra-scientific experimental literature.

The relation of State Boards of Examiners and State Medical Associations presented by Dr. F. C. Warnshuis of Grand Rapids, Michigan. A lively discussion was had on this paper. Dr. Warnshuis making a suggestion that the re-examination of medical men may be desirable. Dr. John H. J. Upham, Dean and Professor of Medicine, Ohio State College of Medicine, Columbus, Ohio, and Trustee of the American Medical Association, opposed any idea of re-examination or the special examination for the specialist. He believes that the examinations of any class A school should be recognized by all states. That the supervision of these class A schools by the Association of Medical Colleges is in itself a certification of the qualifications of the applicant or graduate. Dr. Dougherty of New York, otolaryngologist, concurs in the opinion of Dr. H. J. Upham, stating that in his opinion the State Medical Association should co-operate with the Licensing Board in upholding the laws pertaining to the medical practice act. That the courts hold a licensing board may grant a license. However, this is not a property right and may be revoked by the granting board if the licentiate has violated any of the provisions in the law under which said license was granted.

The May issue of the Federation Bulletin of State Medical Boards in the United States has considerable material relative to the trend on medical licensure. Also citations of convictions under the medical practice acts, federal narcotic, operation of basic science laws in Wisconsin, etc.

RADIO CENSORSHIP

This brings up the controversy between radio station KTNT and the Federal Radio Commission. An extensive report will be found on page 149 of the Federation Bulletin issue of May, 1931. The Hon. Ellis A. Yost, Chief Examiner for the Federal Radio Commission, recently filed with the Commission his report covering the application for a renewal of KTNT's license. Mr. Yost, in his report, cited in support of his findings and recommendations the recent opinion of the Court of Appeals of the District of Columbia, which affirmed the action of the Federal Radio Commission in denying the application of Station KFKB for a renewal of its broadcasting license.

Mr. Yost, after giving this statement of facts, calls attention to the further fact that the state

of Iowa while entitled only to 7.3 units of radio facilities has, under present conditions 12.62 units, or 73 per cent above its quota. This by the way. Mr. Yost then gave in his report to the Commission the following conclusions:

"1. A radio broadcasting license imposes an inescapable obligation on the license to serve public interest, and promote public welfare.

"2. It is not in the public interest for a radio broadcasting station to provoke personal or community strife and turmoil, by means of radio communication.

"3. A radio broadcasting station licensee should not unjustly attack legitimate organizations or individuals in order to further his own personal interests and business.

"4. A station may have much in its public service record to commend it and at the same time there may be set over against this record sufficient objectionable matter to discredit such station.

"5. It is not necessary that a licensee violate any of the penal provisions of the Radio Act in order to forfeit the right to a renewal of license; this may be done by simply failing to serve public interest, convenience or necessity.

"6. A proper respect for the rights, privileges and opinions of all peoples should be observed and maintained by all licensees.

"7. Since the home is the principal listening post in the broad field of radio reception, nothing which tends to vulgarity, immorality or indecency has any place in radio communications.

"8. Anything that tends to unjustly destroy or injure the legitimate business of any person or group should not be broadcast by a license.

"9. A license may be entirely mistaken as to what constitutes a genuine public service."

HEALTH INSURANCE

This subject was very ably presented by Dr. W. C. Rappley. The Doctor has spent some time abroad studying various plans in England, Holland, Russia, Germany and certain parts of Canada. The medical profession should study these plans and acquaint themselves with the results after they have been in operation for some time, and from the experiences of those connected with the health insurance acts of foreign countries work out some plan that will be more satisfactory to the public welfare and the medical profession. If the medical profession does not do this, other interests will lead us into state medicine.

REPORT OF DELEGATE TO AMERICAN MEDICAL ASSOCIATION

By J. F. D. COOK, M. D.

Your Secretary, as your delegate, attended the Detroit Session of the American Medical Association, and I will call your attention to some of the outstanding subjects that were presented for consideration.

Bureau of Legal Medicine and Legislation presented reports upon The Sheppard-Towner Maternity and Infancy Act which expired June 30, 1929. *The Federal Narcotic Legislation.* The Bureau have had a program co-operating throughout the year with the Committee on Uniform State Narcotic Act of the Conference of Commissioners on Uniform State Laws, in preparing a draft of proposed uniform Narcotic Act. The purpose of the model state act is to embody in legal form the principles that seem to the conference to be essential in state legislation. This will give the states a reasonable guide in any efforts that they may make to enact new narcotic legislation or any supplementary legislation to present laws.

WORLD WAR VETERANS' LEGISLATION

The policy that the government has adopted with respect to the medical, surgical, hospital, nursing and dispensary care of veterans and their families and dependents, places the federal government in competition with private practitioners and private hospitals.

PROPOSED AMENDMENT TO BY-LAWS

The Judicial Council submitted the following amendment: That Section 2 of Chapter XI of the By-Laws of the American Medical Association be amended so as to provide that no person who is not a doctor of medicine shall be permitted to become a Fellow of the Association.

The Council on Medical Education and Hospitals gave a resume of the year's work in this field. The report states first that:

(a) The avalanche of foreign physicians coming to the United States since the closing of the World War is subsiding.

(b) The licensing of osteopaths as physicians, however, is increasing both by examination and by reciprocity.

(c) More encouraging is the fact that the number of those obtaining certificates of the National Board of Medical Examiners is increasing and more licensing boards are accepting them without further examination.

(d) The results of basic science examinations are more favorable than heretofore. They are helping to restrict not only the non-medical practitioners but also a smaller percentage of the graduates of medical schools who do not have the desired training in the basic sciences.

PROPOSED AMENDMENTS TO BY-LAWS

The By-Laws were amended so as to make possible a Council on Medical Economics. Resolution Committee recommended Resolution on Federal aid for Maternal Welfare and a resolution for the care of veterans. Copies of these were ordered sent to the President of the United States and to every Senator and Representative in Congress. (See proceedings of the A. M. A. House of Delegates, June 23-27, 1930.)

Committee on Legislation and Public Relations stressed the necessity of Proper Preparation of Charges and Appeals. Quoting from the report as follows:

"It is, at best, unfortunate that official action contemplating the application of discipline should have to be taken, but it is of the utmost importance that any society that finds it necessary to proceed against any member or any group of members shall see to it that charges preferred are specific, that rules of evidence are fully observed, and that legal methods of procedure are carefully followed. The technicalities of evidence as prevailed in courts of law whether they be civil or criminal courts should not be insisted upon. Appeals must be made in the prescribed form, and the records submitted to appellate bodies must be accurate and complete."

One of the outstanding social functions of this Session was the Past Presidents' Dinner given by the Wayne County Medical Society. All living past presidents of the American Medical Association were honored in a most gracious manner by the American Medical Association in the presentation of the Association's gold medal as an appreciation of their services to the Association as President.

House of Delegates decide to hold Executive Sessions to consider such problems as may properly come before that body.

FINANCIAL REPORT

By J. F. D. Cook, Secretary-Treasurer

CASH RECEIVED

DATE			
1930			
May	31	Balance	\$3,388.69
June	4	Sioux Falls District	30.00
	9	Whetstone Valley District	10.00
July	7	Aberdeen District	10.00
	7	Sioux Falls District	30.00
	7	Whetstone Valley District	10.00
	7	Madison District	20.00
	7	Black Hills District	20.00
	10	Aberdeen District	10.00
	22	Sioux Falls District	10.00
Aug.	4	Mitchell District	40.00
	9	Watertown District	10.00
	16	Mitchell District	10.00
	20	Black Hills District	20.00
	22	Aberdeen District	10.00
Oct.	11	Black Hills District	10.00
Dec.	2	Sioux Falls District	10.00
	13	Huron District	10.00
	19	Aberdeen District	10.00
	24	Sioux Falls District	10.00
1931			
Jan.	30	Mitchell District	150.00
	31	Sioux Falls District	10.00
Feb.	12	Mitchell District	10.00
	24	Rosebud District	90.00
Mar.	3	Yankton District	320.00
	9	Watertown District	250.00
	18	Yankton District	10.00
	25	Interest on C. D.'s	16.34
	26	Aberdeen District	380.00
	27	Huron District	200.00
	27	Kingsbury Co. District	50.00
Apr.	1	Black Hills District	150.00
	4	Sioux Falls District	250.00
	17	Kingsbury Co. District	30.00
	17	Huron District	10.00
	17	Yankton District	10.00
	17	Pierre District	80.00
	18	Mitchell District	30.00
	22	Yankton District	30.00
	22	Madison District	140.00
	29	Whetstone Valley District	150.00
	29	Aberdeen District	40.00
May	5	Sioux Falls District	100.00
	9	Mitchell District	60.00
	25	Mitchell District	10.00
	25	Aberdeen District	20.00
	29	Mitchell District	10.00
	29	Madison District	30.00
			\$6,315.03

July	13	H. Meyers, drayage on safe.....	5.00
	14	L. Miles, P. M., ptg., stry.....	29.25
July	8	Art. Ptg. Co., signs	3.00
	9	Langford Telephone Co.	2.90
	15	J. F. D. Cook, expenses A. M. A.....	100.00
	15	L. Miles, P. M., stry. and Env.....	19.10
	16	Landers	30.00
	19	Huffman Twp. Co.	9.20
	21	Bureau of Engraving	3.48
	31	J. F. D. Cook	100.00
Aug.	13	Sioux Falls District	20.00
	14	J. F. D. Cook	100.00
	14	Master Reporting Co.	424.96
Sept.	2	Farrar Drug Store, mimeo. paper.....	6.50
	6	Hobert Co.	16.50
	13	L. Miles, stpd. envs. and ptg.....	32.64
	20	L. Miles, blanks, ptg.....	17.40
	24	L. Curfman, messages	2.56
Nov.	4	Fletcher & Fletcher	3.00
	4	F. R. Harding, bond	2.50
	12	J. F. D. Cook	100.00
Dec.	2	Telephone messages	3.35
	6	Journal-Lancet	324.00
	22	L. Miles, ptg.	28.07
	24	L. Miles	10.00
	24	J. F. D. Cook	75.00
1931			
Jan.	30	Huffman Supply	4.00
	30	Western Union, messages	7.31
	31	Western Union, messages	1.62
Feb.	17	L. Miles, stpd. envs.	12.82
Mar.	4	Western Union, messages	20.35
	5	Dakota Central, messages	4.60
	24	J. F. D. Cook	125.00
	31	Dakota Central, messages	16.05
Apr.	6	J. F. D. Cook	50.00
May	22	Hipple Ptg. Co.	1.10
	6	J. F. D. Cook	50.00
	13	L. Miles, stpd., envs. & cuts.....	61.39
	22	Searle Bros. Ptg. Co., programs.....	106.50
	22	Searle Bros. Ptg. Co., Auxiliary.....	3.35
	25	St. Louis Button Co., badges.....	75.61
		Total	\$2,491.85
		Total Cash Receipts	\$6,315.03
		Expenditures	2,491.85
		Balance	\$3,823.18

FUNDS

How Disposed

Langford State Bank checking account.....	\$ 108.68
Langford State Bank, Certificate No. 375.....	735.92
Langford State Bank C. Ds.	266.92
Bond, Due June, 1932 ..	500.00
Aberdeen National Bank & Trust Co.....	2,287.22
	\$3,898.74
Checks issued and out, May 29, 1931.....	75.56
May 29, 1931, Balance	\$3,823.18

J. F. D. Cook, M. D., Secretary-Treasurer.

Auditing Committee approved June 3, 1931.

E. A. Pittenger, M. D.

A. S. Rider, M. D.

A. A. McLaurin, M. D.

EXPENDITURES

DATE			
1930			
June	2	Journal-Lancet	\$ 352.00
	3	P. A. Brooks	12.00
	5	Huffman Twp. Co.	8.25
	11	Harrison Co., safe	75.00
	12	L. Miles, P. M., postage.....	3.00
	12	F. W. Chambers, freight on safe.....	3.49

REPORT OF THE COUNCILORS

The following written reports were received:

WATERTOWN DISTRICT

H. W. SHERWOOD, M. D.

The following is a report of the 2nd district for the year ending May 1, 1931. There are twenty-seven members in good standing, twenty-five of which are in active practice and two are retired and are honorary members. There are two physicians in the district who hold their membership in some other society in the state and are members of the State Association. There are two physicians in the district who are retired and are eligible to honorary membership in the Association—three who are in active practice who do not belong to any society in the State.

The officers are:

President—Dr. Edmond N. Nelson, Watertown (lately deceased).

Vice-President—Dr. J. H. Lockwood, Henry.

Secretary-Treasurer—Dr. Wm. Duncan, Watertown.

Censor (3 years)—Dr. A. H. Christensen, Clark.

Censor (2 years)—Dr. F. H. Staley, Vienna.

Censor (1 year)—Dr. M. J. Hammond, Watertown.

Delegates for 1931—Dr. W. G. Magee, Watertown; F. Koren, Watertown.

Alternates—Dr. H. M. Freeburg, Watertown; Dr. M. J. Hammond, Watertown.

During the year we had four profitable and well attended meetings at which time members of our own society and physicians from noted clinics presented papers and held clinics.

Those out of the state were Dr. R. E. Kennedy and Dr. C. J. Barbourke of the Mayo Clinic, and Dr. W. A. Fansler, Dr. F. C. Rodda and Dr. Edward A. Regnier of Minneapolis.

During the year Dr. J. B. Vaughn prepared a comprehensive and complete history of the Watertown society with a complete list of membership.

On the whole we have had a very prosperous and successful year and I have great hopes for the future of our society.

We were much surprised and grieved at the death of our honored president, Dr. Edmond Nelson, which came as a shock a short time ago. We extend to his bereaved relatives our heartfelt sympathy.

MADISON DISTRICT

C. E. SHERWOOD, M. D.

During the past year the third District has held four meetings. It is our practice to hold the meetings alternately in Brookings and Madison, with the members residing in these two towns being responsible for the program at home. These meetings usually begin with the dinner held jointly with the Ladies' Auxiliary. After dinner the ladies retire to their program and we have our program which consists of papers, case report demonstrations and clinics conducted by members of the society with occasionally an outside speaker.

There are fifteen members in good standing and there are about seven physicians in the district who are not members.

During the year we lost by death our president, Dr. B. T. Green of Brookings.

PIERRE DISTRICT

A. A. McLAURIN, M. D.

It is my pleasure to report to you at this time that the Fourth District Medical Society has continued to function throughout the present year without the loss of any of its members. It is my impression that there has been an improvement in the good fellowship among the various members of this Society. The District was financially unfortunate in that the bank where our account was kept was closed some months ago. To date we have received a 25 per cent payment on our original deposit.

SIOUX FALLS DISTRICT

A. S. RIDER, M. D.

The Seventh District Medical Society has enjoyed a very profitable year. There were eleven meetings and we were privileged to listen to several distinguished outside men. Dr. O. H. Wangenstein of Minneapolis, Dr. Boyd Gardner of Rochester, Dr. J. P. Lord of Omaha, Dr. Wm. Jepson and Dr. A. Kolodny of Sioux City, were with us at various times during the year. Dr. Frank of State College at Brookings, Dr. J. C. Ohlmacher and Dr. G. R. Albertson of the State University, presented excellent papers. Drs. J. B. Gregg and F. C. Nilsson of our own society, discussed eye problems of interest to general men. We had several series of very interesting and instructive films.

We have a total of fifty-five members. However, only 27 had paid their dues on April 21st. It is expected that all will have done so prior to our State Meeting.

ROSEBUD DISTRICT

H. R. KENASTON, M. D.

The Tenth District Medical Society is composed of nine members and has not been very active during the year 1930-31.

Only one meeting has been held, which meeting was at Winner, S. D., January 21, 1931, for the purpose of electing officers and payment of dues.

The following verbal reports were received:

ABERDEEN DISTRICT

M. C. JOHNSTON, M. D.

The District is moving along without any friction at the present time. Everybody has his shoulder to the wheel trying to boost things along. Everything is taken care of. We will have, as you know, tomorrow night, a smoker at the club, following the golf tournament. Everybody who plays golf or wants to hold a place will be given a chance at the Country Club. When you register in the morning, you will be given tickets for the entertainment. There is a party tomorrow night for the ladies. The Dutch lunch tomorrow night can be spoken well for. We have tried to provide a substantial feed. The vaudeville program will be very entertaining and we want you all to be present. As far as the District is concerned, all meetings have been at Aberdeen the past year, except one meeting at Enemy Swim Lake, near Webster, which was in conjunction with the Whetstone Valley Society. This was very interesting and well attended. We had between forty and sixty medical men there. We had a very good time; a good program, being entertained with bathing, fishing, etc. We tried to make it an annual event, meeting with the Whetstone Valley Society. Having the combined meeting there

each year promotes good fellowship and aids in getting acquainted with your neighbors. We are going to meet at Mobridge and expect next year to meet at some of the other towns in the District so as not to hold all the meetings in one place. It is an excellent plan to spread the meetings around and divide it up, keeping everybody interested.

KINGSBURY CO. DISTRICT

A. E. BOSTROM, M. D.

I did not get the information I wanted from the Secretary in time to write a report but can state, as usual, that our society is in harmonious, active condition. All the members have not paid their dues and the secretary is waiting before he sends in the report. We have had several meetings during the year and the society is in as good condition as usual.

BLACK HILLS DISTRICT

N. T. OWEN, M. D.

We always have four meetings a year. One every three months. We usually have these meetings at different places. Hot Springs, Rapid City, Deadwood, and Lead. Once in a while a meeting is held at Spearfish or Sylvan Lake. The meeting in August this year was very well attended, as they have all been except last year in November at Rapid City on account of the storm. Practically all those in attendance were Rapid City men. I notice in the report that only fifteen members are paid up in the Black Hills District. There are very many men in the Black Hills District that won't join our society on account of the fee. That shows a whole lot in our state membership. 262 out of almost 600 physicians belong.

WHETSTONE VALLEY DISTRICT

CHAS. FLETT, M. D.

For Grant, Day, and Roberts Counties, the membership for the twelfth district is now sixteen paid members, according to the secretary. We have in the counties, 24 licensed physicians which would give but 66⅔ per cent, which is not as it should be, but it seems very hard to raise the percentage. Old officers and new officers have tried to get them all to join, but some don't join very good. Part of them go from Day County to Aberdeen, which lowers our percentage. The fee that we have been paying in our society has been but \$10.00, which seems inadequate, and there is an effort made to raise that so we will have some little fund at home. During the year we have had four meetings. The attendance is fairly good, generally having about 12 to 15 members present, and sometimes we have invited in the dentists. The matter of the affiliation of our society with the Watertown District Society was discussed. Their President, E. N. Nelson, who recently died, and their secretary came over one evening and discussed the proposition. It was talked over later, put to vote, and it was decided that we continue to struggle along as best we can with our small society. Feeling we will have more interest in our society if we keep it as it is, and probably have more men attending the meetings. It is the feeling, at the present time at least, to retain the charter of the twelfth district. Dr. A. W. Pearson of Peever, who has been Assemblyman in the

State Legislature for two terms, addressed our society, stating that it was his opinion that a Basic Science Law could be passed without much trouble if we, as physicians, see that the men all take hold and see that our men go in as senators and representatives. It was looked up and I believe that it could be put over without much difficulty if this plan were followed.

Dr. Chas. Flett read the following article:

CURRENT COMMENT

A. M. A. Journal, April 4, 1931

"A GOVERNOR LOOKS AT CHIROPRACTIC"

"Governor Buck of Delaware has returned to the legislature, without his approval, a bill to create a board of chiropractic examiners and to regulate the practice of chiropractic. His summarization of the reasons for his veto is so clear and terse that it should be read by the legislators and governors of every state that is threatened or already afflicted with this cult. His statement follows:

"The purpose of the act, as I understand it, is to legalize the practice of chiropractic in this state. Practitioners of this cult are not recognized now. Do they profess to be doctors in the same sense of the term as is commonly understood to apply to men and women of the medical profession? Insofar as I am able to determine, there is not a recognized medical school in the country that includes in its curriculum a course in chiropractic. This fact in itself seems singularly significant.

"Even to the lay mind the idea that all disease of whatever character is due to spinal displacements of a mild sort, and that cures of such ailments as tuberculosis, smallpox, diphtheria, scarlet fever and others can be effected by manipulation and fingering of the spine is preposterous.

"Before returning this bill to you I have satisfied myself that the training and education a chiropractor, or drugless healer, needs, to practice his art, does not fit him properly to advisedly treat the sick, inasmuch as he is not qualified to diagnose ailments nor recognize communicable diseases and to take measures to control them. He is therefore an opponent to the department of health.

"Wherefore, it seems to me it would be inconsistent for the legislature to appropriate, as it will do, money for the State board of health, which board is trying to eradicate communicable diseases, and at the same time legalize the practice of a cult which does not believe in the germ theory of a disease but does teach and believe that such diseases as scarlet fever, etc., are due to a distracted vertebra and the method to prevent and cure such disease is to see that everybody has a normal spine."

MITCHELL DISTRICT

FRED TREON, M. D.

This District has had eight or ten meetings, all of them of interest. Twenty-eight, I think, have paid their dues, and I have no doubt that there are pretty nearly double that number in the district. If the secretary were here, he could tell us more about it, but there seems to be no one from Mitchell here this evening. There will be tomorrow. I attended three or four meetings, although the distance is over seventy miles, which necessitates the getting home very late, because they are held after nightfall, but they have been good

meetings, every one of them first class, with everybody taking an interest in the discussions. I wish it were possible to give you more minute details of the working of the Mitchell District, but I don't feel that I should attempt it because I am so far away from it. I think that there is a good chance for a healthy growth. I hear a lot of complaint about the amount which is charged for dues. Some of them on the train this evening thought they were pretty high, from the way collections are.

Motion by Dr. E. A. Pittenger, seconded by Dr. A. S. Rider that the report be accepted and referred to the auditing committee.

REPORTS OF STANDING COMMITTEES

The Committee on Scientific Work presented the printed program as their report.

REPORT OF COMMITTEE ON HYGIENE

Mr. President and Members of the House of Delegates:

Your Committee on Hygiene respectfully submit the following report for the year ending June 1, 1931.

The general health conditions of the state are fairly satisfactory. No serious widespread epidemics have been present. The report of contagious and communicable diseases has improved in the past year probably due to increased activity on the part of the State Board of Health. This body has available funds, through state appropriation, for the free distribution of toxin-anti-toxin in 1931. A very commendable movement, and a vigorous campaign should be undertaken to stimulate interest in immunization.

In 1930 we had 4,181 babies born; 101 died, making a death rate of 24 per 1,000 live births. There were 111 still-born and 86 illegitimate during this time. There were 90 inspections of maternity homes and hospitals. It is probably safe to say that at least 50 per cent of the above deaths could have been prevented. Lack of prenatal care was the most serious offender, and our full co-operation with the State Board of Health in the dissemination of their educational literature along this line is essential.

Preschool conferences were given in 51 counties and 76 towns. 2,307 children were examined and 784 expectant mothers advised.

As usual there was the baby clinic and the examination of the Boys' & Girls' Club at the State Fair.

Twelve crippled children—scattered throughout the State—were cared for and several others investigated and examined.

A vast amount of literature consisting of pamphlets, charts, posters, personal letters, etc., were

sent out from headquarters. More people every year are availing themselves of this opportunity, showing that the educational program is having an effect. The Director should be commended for the amount of work accomplished on such a limited amount of money and personnel, and we should co-operate in every way possible with this department to further its educational program.

W. H. SAXTON, M. D.

GOLDIE ZIMMERMAN, M. D.

E. A. PITTENGER, M. D.

Committee.

REPORT OF COMMITTEE ON NECROLOGY

WHEREAS, in its immutable cycle of progression, Nature has caused numbers of our fellow practitioners in the art and science of alleviating suffering and healing the ill, to lay down their working tools of our craft forever, and,

WHEREAS: The following who have found rest were members of the South Dakota State Medical Association, in good standing:

BURTIS T. GREEN, M. D., Brookings, So. Dak.

GEORGE WILLIAM LAUNSPACH, M. D., Huron, So. Dak.

JOHN FREDERICK MILLER, M. D., Andover, So. Dak.

EDWIN WILSON PICKARD, M. D., Bonesteel, So. Dak.

EDMOND NEWELL NELSON, M. D., Watertown, So. Dak.

THOMAS BENJAMIN SMILEY, M. D. (Past President), Mount Vernon, So. Dak.

FRANK ARTHUR SWEZEY, M. D., Wakonda, So. Dak.

WHEREAS: These, who were not affiliated with this Association, nevertheless were doing their duty to God and Man as they saw it, and serving their clientele with the same unselfishness that marks the true physician wherever found:

NEIL ALDEN BRIGHT, M. D., Hudson, So. Dak.

JOHNSON J. GLAZIER, M. D., Springfield, So. Dak.

ALBERT SHERRILL, M. D., Belle Fourche, So. Dak.

WILLIAM JOSEPH WEBSTER, M. D., Vivian, So. Dak.

THOMAS G. THOMPSON, M. D., Sioux Falls, So. Dak.

BE IT THEREFORE RESOLVED: That this, the South Dakota State Medical Association, duly assembled in its regular session, bow in humble submission to the will of the Almighty God, of whom Nature is a visible manifestation, knowing that death is the inevitable period to all our earthly struggles against frailties of humanity, and be it further

RESOLVED: That those of us who had differences of opinion, or personal friction with some of our departed brothers, will think kindly of them, remembering the truth of the quotation from Kipling, that

"The sins you do by two and two,

You pay for one by one,—"

and that many, if not most of us, have done the very

things for which we have condemned others, but have not been found out.

By your committee,
L. J. PANKOW, M. D.
C. O. OLSON, M. D.
J. B. VAUGHN, M. D.

REPORT OF COMMITTEE ON ANNUAL ARRANGEMENTS

Dr. R. G. Mayer, President Aberdeen District Medical Society; Dr. M. C. Johnston, Councilor Aberdeen District, and Dr. W. A. Bates, President-Elect, gave verbal reports of the social activities.

COMMITTEE ON REVISION OF THE UNITED STATES PHARMACOPEIA

REPORT—DR. J. B. VAUGHN,
Castlewood, South Dakota

Delegate to U. S. Pharmacopeia Convention,
May 13, 1930, Washington, D. C.

Mr. President, Guests and Fellow Members of
the South Dakota State Medical Association:

It was a privilege as well as a pleasure to represent this State Association at the Eleventh Decennium of the Pharmacopeial convention which was held in Washington, D. C., May 13, 1930. The other two delegates, Drs. W. J. Maytum of Alexandria, and H. R. Kenaston of Bonesteel, were unable to attend.

Dr. Reod Hunt of Harvard Medical School was elected President at the tenth session in 1920, hence he presided over the meeting.

On January 8, 1917, Dr. Lyman Spaulding of New York Co., N. Y. State, presented a paper to a medical meeting in which he stressed the need of a National Pharmacopeia.

As a result of this paper ten physicians were named to take steps to that end.

These ten physicians with other physicians of the United States who had been selected as delegates met in Washington on January 1, 1920. Before their adjournment they had perfected plans whereby they were able to have the first edition printed December 15, 1920.

You will observe that the mother of the Pharmacopeia was the Medical profession. However, the Pharmacy brethren revere her to the extent as if she was their own.

Of the 500 delegates in attendance at the 1930 meeting the pharmaceutical men were decidedly in the majority. The medical men do not enthuse over the revision as the pharmacy group. It is the aim of the organization to have something like equal representation from each group.

The delegates in a general manner are apportioned to the various medical schools and colleges and the state medical societies and the colleges and the state medical societies and the colleges of pharmacy and their state associations.

The meeting of this association is held every ten years in the city of Washington, the chief object, as its name designates, is the revision of the National Pharmacopeia.

In the selection of the committee for the revision the medical group repaired to a certain place while the pharmacy group repaired to another. The medical side within a short time named their seventeen members of the committee.

There was much balloting with the pharmacy group and it took until the wee hours of the morning for them to elect their thirty-three members. Dean Searls of Brookings was elected by the pharmacy men. D. F. Jones of Watertown tied for a place and by lot lost out.

It is estimated that it will take this committee four or five years to complete the revision and have it in print.

The President of this body for 1930-1940 is Dr. W. A. Bastedo, the Secretary is L. E. Warren of the Department of Agriculture.

Chairman appointed Drs. A. S. Rider, M. C. Johnston, N. T. Owen as the Committee on Resolutions.

A resolution on food fads was presented and referred to the Committee on Resolutions.

RESOLUTION

WHEREAS: Much misinformation is promulgated today on the question of diets, etc., causing the introduction in the American diet—food fads.

Very few of these fad foods can take the place of the older staple foods, good meat, dairy products, green vegetables, fruits and the better grades of bread prepared from white flour.

Any balanced diet should contain animal protein, fruits, vegetables, especially the leafy vegetables, which will insure adequate vitamin and mineral salt content, digestible fat such as butter-fat, and sufficient of the digestible carbohydrates to afford readily available energy.

Carbohydrates, including sugar and starches, but especially starches, furnish the American public their main fuel for energy, the quantity varying with the amount of physical activities which the individual expends. Much of the starch should be supplied by the most available and easily digestible foodstuffs, of which white flour is an excellent example.

The Allegation that white bread, meat or any other staple food, when employed in mixed diet is responsible for certain grave illnesses, is not supported by scientific facts.

THEREFORE, BE IT RESOLVED THAT: We desire in the public interest, to place on record that in our opinion:

1. The exaggerated claims for various fad foods are entirely unwarranted by scientific evidence or practical

experience; and the advertising and other propaganda furthering their substitution for the older articles of diet should be condemned.

2. The danger of nutritional deficiencies has been grossly exaggerated. No one food is a perfect food; but a diet consisting of dairy products (especially milk), leafy vegetables, fruits, meats and easily digested starches for heat and energy, furnishes an excess of all food factors necessary for proper growth and nutrition and resistance to disease.

3. Any variation from normal diet should only be prescribed by a properly trained physician after a careful study of the dietary requirements of the individual seeking advice.

By the Committee,

A. S. RIDER, M. D.

M. C. JOHNSTON, M. D.

N. T. OWEN, M. D.

Resolution relative to the Federal Government policy rendering medical and hospital benefits to veterans of the World War with non-service connected disabilities was referred to the Committee on Resolutions.

Resolution presented to the South Dakota State Medical Association.

WHEREAS: The Federal Government has inaugurated the policy of rendering medical and hospital benefits to veterans of the World War with non-service connected disabilities; and

WHEREAS: This policy was inaugurated over the opposition of the American Medical Association; and

WHEREAS: The policy, now in force, if carried to its logical conclusion, involves the construction, the staffing, and the maintenance of a sufficient number of hospitals to accommodate the hospital needs of all the veterans of the World War; and

WHEREAS: Such a policy places the Federal Government in unnecessary and unjust competition with the civilian hospitals and the medical profession of the United States; and

WHEREAS: The present policy is of unequal benefit to veterans by reason of the fact that many disabled veterans cannot (for one reason or another) avail themselves of the benefit; therefore,

BE IT RESOLVED: That the House of Delegates of the South Dakota State Medical Association petition the Congress of the United States to abandon the policy of rendering hospital and medical benefits to veterans of the World War with non-service connected disability, and substitute therefore a plan of disability insurance, and the use of non-governmental facilities already available.

We are firmly convinced that the hospital program now under consideration by the Veterans Bureau and War Department is not a good policy, for the reason that the hospital load will soon be beyond the peak and the country will be the possessors of numerous unoccupied hospitals.

And furthermore, the facilities already available are adequate to take care of any present overcrowding of Veterans hospitals, if made use of by the government. Government competition with other hospitals, which are being maintained with great difficulty during this period

of depression is, in our opinion, unjust and uncalled for.
By the Committee,

A. S. RIDER, M. D.

M. C. JOHNSTON, M. D.

N. T. OWEN, M. D.

Communication from the Secretary of the Minnesota State Medical Association submitting a report of the Committee on Military Affairs of the Minnesota State Medical Association which was referred to the Committee on Resolutions.

Resolution to be presented to the House of Delegates of the Minnesota State Medical Association by the Committee on Military Affairs:

WHEREAS: The present Army regulations require that every reserve officer shall, during each five years commission period, put in two hundred (200) hours military work, in camp, correspondence school, inactive training meetings, or similar military activity, or else become ineligible for renewal of his commission with assignment to an Organized Reserve Unit, and therefore revert to the "Auxiliary Reserve" in time of peace, and,

WHEREAS: There are many highly trained, highly skilled and very active physicians who, as reserve officers, have been assigned as chiefs and assistant chiefs of surgical, medical, laboratory, roentgen and other distinctly professional services in Organized Reserve Hospital Units, carrying very little administrative responsibility, and whose professional duties in busy private lives make them especially well fitted for their duties in their army assignments, but whose same duties make it practically impossible for them to carry on military work in time of peace, and

WHEREAS: Many of these men and their valuable attainments are being lost to the Organized Reserve, although they are willing and anxious to serve in time of need and do not aspire to advancement in grade.

THEREFORE, BE IT RESOLVED: That the Minnesota State Medical Association desiring that the Medical Profession may be of the greatest service to our country, respectfully suggests that the service might be enhanced if the regulations were changed to provide for re-commission and reassignment of chiefs and assistant chiefs of professional services of Hospital Units even though they have not completed the required amount of military work, and further

BE IT RESOLVED: That a copy of this resolution be sent to the Surgeon and the Commanding General of the Seventh Corps Area, The Surgeon General, the Officer in charge of Reserve Affairs, the Adjutant General and The Chief of Staff of the United States Army.

RALPH T. KNIGHT, M. D., Chairman.

Referred to Committee on Resolutions.

REPORT OF JOINT COMMITTEE HOUSE OF DELEGATES

The members of committee on proposed joint session journeyed to Bismarck, N. D., May 26, 1930, met with the House of Delegates of North Dakota, and presented a formal invitation to the North Dakota State Medical Association to a

Joint Session at Aberdeen in 1931, celebrating the Fiftieth Annual Session of Organized Medicine in Dakota Territory.

Your committee was graciously received.

The North Dakota State Medical Association accepted the invitation. Designated a committee to co-operate with the South Dakota Committee.

The Joint Committee met September 27, 1930, at Jamestown to organize and adopt plans for the program.

Members for North Dakota: Dr. W. H. Long, Fargo; Dr. L. W. Larson, Bismarck; Dr. R. D. Campbell, Grand Forks; Dr. Andrew Carr, Sr., Minot; Dr. A. W. Skelsey, Fargo.

Members for South Dakota: Dr. Percy D. Peabody, Webster; Dr. W. A. Bates, Dr. M. C. Johnston, Dr. E. A. Pittenger, Aberdeen, and Dr. J. F. D. Cook, Langford.

The Joint Committee organized by electing Dr. W. H. Long of Fargo, N. D., as Chairman, and Dr. J. F. D. Cook, Langford, S. D., as Secretary.

The type of program was discussed and it was decided to devote the forenoons to clinics, and afternoons to papers; that scientific and commercial exhibits be sponsored.

The committee met February 1, 1931, at Jamestown to further consider the talent for program.

The printed program is the result of the co-operation of the men on this committee.

The members of this committee have given of their time unstintingly without compensation to complete their assignment.

Respectfully submitted,

W. H. LONG, M.D., Chairman,
J. F. D. Cook, M.D., Secretary.

COMMITTEE

NORTH DAKOTA

W. H. LONG, M. D., Chairman.
L. W. LARSON, M. D.
R. D. CAMPBELL, M. D.
ANDREW CARR, SR, M. D.
A. W. SKELSEY, M. D.

SOUTH DAKOTA

M. C. JOHNSTON, M. D.
E. A. PITTENGER, M. D.
W. A. BATES, M. D.
P. D. PEABODY, M. D.
J. F. D. COOK, M. D., Secretary.

The House of Delegates discussed the feasibility of a registration fee to assist in covering the expenses of this Jubilee Session. On motion, by Dr. Fred Treon, it was duly seconded that a registration fee of \$3.00 be charged at this session and that such amount from the Association

funds as may be necessary to carry out the program. This motion carried.

President Peabody introduced Dr. H. M. Workman of Tracy, Minnesota, Chairman of the Council of the Minnesota State Medical Association. Dr. Workman presented "Minnesota Medicine" and proposed that it be adopted as the official organ for South Dakota. The Doctor, in a very gracious manner, presented the "Minnesota Medicine" side of this very estimable journal which is owned by the Minnesota State Medical Association.

President Peabody presented Dr. J. A. Myers, Minneapolis, Chairman of the Editorial Board of the JOURNAL-LANCET, who presented the program, as outlined, for the conduct of the JOURNAL-LANCET in the future.

These propositions were discussed at length and it was moved that the matter of official organ be laid on the table until the next meeting which carried.

Secretary Cook presented a matter of advertising which has been carried out in North Dakota and proposed to South Dakota by the Dakota Farmer, advertising clinics and physicians. A member of the Aberdeen District Medical Society called this to the attention of the Secretary, asking that an opinion be rendered. The Secretary presents this material for your consideration. After much discussion, this type of advertising was condemned by the House of Delegates.

Motion made by Dr. L. J. Pankow and duly seconded by Dr. A. S. Rider that the report of the committee meeting with the North Dakota Committee for the Joint Session be accepted. Motion carried.

Hon. A. W. Pearson, M. D., of Peever, a member of the legislature for several sessions, has consented to make a report on some of the material affecting public welfare which was presented during the last session.

As our time was limited it was proposed that Dr. Pearson present his report to the Council at the first meeting this fall, which will give ample time for a full discussion.

Adjourned to meet Wednesday morning at 7:00 o'clock A. M.

J. F. D. COOK, M. D.,
Secretary.

The following scientific exhibits were well placed and of interest to the men in attendance:

Mitchell District Medical Society, St. Joseph's Hospital, Mitchell, S. D.

Methodist Episcopal Hospital, Mitchell, S. D.
Huron Clinic, Huron, S. D.

Sioux Falls Clinic, Sioux Falls, S. D.
 Department of Pathology, School of Medicine,
 University of South Dakota, Vermilion, S. D.
 Quain and Ramstad Clinic of North Dakota.
 Legislative Committee of North Dakota.
 Lymanhurst School of Minneapolis.
 Pokegama Sanatorium, Pokegama, Minn.
 State School and Home for the Feeble-minded,
 Redfield, S. D.
 A. A. McLaurin, M. D., Pierre Hospital.
 R. S. Westaby, M. D., New Madison Hospital.
 The Committee wishes to thank all parties for
 their co-operation in presenting the scientific ex-
 hibits.

JOINT COMMITTEE,

J. F. D. Cook, M. D.,
 Secretary.

SECOND MEETING OF HOUSE OF DELEGATES

June 3, 1931—7:00 A. M.

The meeting was called to order by Dr. Percy
 D. Peabody, President.

The Secretary, Dr. J. F. D. Cook, called the
 roll. Members present: Drs. P. D. Peabody,
 Pres.; W. A. Bates, J. R. Westaby, J. F. D. Cook,
 Secy.; M. C. Johnston, H. W. Sherwood, C. E.
 Sherwood, A. A. McLaurin, E. B. Taylor, Fred
 Treon, A. S. Rider, S. M. Hohf, N. T. Owen,
 H. R. Kenaston, A. E. Bostrom, Chas. Flett, L.
 N. Grosvenor, E. A. Pittenger, Magni Davidson,
 B. M. Hart, W. H. Saxton, W. R. Ball, G. R.
 Albertson, W. J. Matousek, G. V. Jamieson and
 H. C. Peabody.

Dr. A. S. Rider read the report of the Com-
 mittee on Resolutions.

RESOLUTION RELATIVE TO DIETS AND FOODS

WHEREAS: Much misinformation is promulgated to-
 day on the question of diets, etc., causing the introduc-
 tion in the American diet,—food fads.

Very few of these fad foods can take the place of
 the older staple foods, good meat, dairy products, green
 vegetables, fruits and the better grades of bread pre-
 pared from white flour.

Any balanced diet should contain animal protein,
 fruits, vegetables, especially the leafy vegetables, which
 will insure adequate vitamin and mineral salt content,
 digestible fat such as butter-fat, and sufficient of the
 digestible carbohydrates to afford readily available
 energy.

Carbohydrates, including sugars and starches, but es-
 pecially starches, furnish the American public their main
 fuel for energy, the quantity varying with the amount
 of physical activities which the individual expends.
 Much of the starch should be supplied by the most avail-

able and easily digestible food stuffs, of which white
 flour is an excellent example.

The allegation that white bread, meat or any other
 staple food, when employed in mixed diet is responsible
 for certain grave illnesses, is not supported by scientific
 facts.

THEREFORE, BE IT RESOLVED THAT: We desire in the
 public interest, to place on record that in our opinion:

1. The exaggerated claims for various fad foods are
 entirely unwarranted by scientific evidence or practical
 experience; and the advertising and other propaganda
 furthering their substitution for the older articles of diet
 should be condemned.

2. The danger of nutritional deficiencies has been
 grossly exaggerated. No one food is a perfect food;
 but a diet consisting of dairy products (especially milk),
 leafy vegetables, fruits, meats and easily digested
 starches for heat and energy, furnishes an excess of all
 food factors necessary for proper growth and nutrition
 and resistance to disease.

3. Any variation from normal diet should only be
 prescribed by a properly trained physician after a care-
 ful study of the dietary requirements of the individual
 seeking advice.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION.

A. S. RIDER, M. D.
 M. C. JOHNSTON, M. D.
 N. T. OWEN, M. D.

On motion the report was adopted as read.

Under Unfinished Business, Dr. A. E. Bostrom
 made the following motion: "I move that our
 Secretary be empowered to spend say, not to ex-
 ceed \$100 a year, or any amount he may wish, to
 investigate or to employ such help as he needs
 to take care of those phases of the work, as are
 done in Minnesota and other states."

This motion was made after discussion rela-
 tive to revoking licenses for irregular practice,
 and the employment of legal advice for the bene-
 fit and protection of the Association and members.
 There was some discussion on the subject by
 Drs. L. J. Pankow, N. T. Owen, A. S. Rider
 and H. R. Kenaston.

Dr. L. J. Pankow made a motion that a copy
 of the Resolution on Diets and Foods be sent to
 members of Congress and to the A. M. A.

Dr. E. A. Pittenger gave the following report
 for the Auditing Committee:

"We have checked over the books and they
 are O. K."

E. A. PITTENGER, M. D.,
 A. S. RIDER, M. D.,
 A. A. McLAURIN, M. D.

Motion was made and carried that the report
 be adopted as read.

Dr. J. F. D. Cook, Secretary, read the report
 of the Nomination Committee:

"The Nomination Committee beg to report the
 following nominations, for President-Elect: Dr.

J. R. Westaby, Dr. T. F. Riggs; for Vice-President: Dr. E. W. Jones; for Councilors: Rosebud District, Dr. H. R. Kenaston; Kingsbury District, Dr. A. E. Bostrom; Whetstone Valley District, Dr. Chas. Flett; for Delegate to A. M. A.: Dr. Percy D. Peabody; Alternate Delegate to A. M. A.: Dr. J. F. D. Cook.

On motion made and carried the report was accepted.

Dr. P. D. Peabody, President, appointed Drs. B. C. Murdy and E. A. Pittenger as tellers, for the election of officers.

A written ballot was taken upon the office of President-Elect and 21 votes were cast, and Dr. J. R. Westaby received 21.

Dr. H. R. Kenaston moved that the rules be suspended and that Dr. E. W. Jones of Mitchell be elected as Vice-President of the Association for the ensuing year, which motion was duly seconded and carried.

Dr. H. R. Kenaston moved that the rules be suspended and that the Secretary be instructed to cause the unanimous ballot of this body for the officers as read, which motion was duly seconded and carried.

Dr. J. F. D. Cook, Secretary, declared the officers unanimously elected as instructed.

Committee on Resolutions report and move the adoption of resolutions on Diets and Foods, and resolution relative to the Federal Government policy rendering medical and hospital benefits to veterans of the World War with non-service connected disabilities. Report duly adopted.

Resolution pertaining to Reserve Officers was returned without recommendations.

Dr. A. E. Bostrom made the following motion: "I move that our State dues be reduced from \$10.00 to \$5.00."

Dr. L. J. Pankow seconded the motion and moved that the question be tabled until the next meeting, one year from now, and leave the dues as they are at present.

The motion was seconded and after discussion a rising vote was taken and 15 voted to table the question for one year and 12 voted against. Carried.

Dr. A. E. Bostrom made the motion that \$500 be set aside to be spent each year for legislative work, as the Council sees fit.

The motion was duly seconded but on a vote was lost.

President Peabody announced that the Association had received an invitation to hold their 1932 meeting at Watertown, at a date to be set at a date later, so as not to conflict with the meet-

ing of the American Medical Association or the sister states.

Upon a motion made and carried, the Watertown invitation for the 1932 meeting was accepted.

Fraternal greetings from the Iowa State Medical Association to North and South Dakota State Medical Associations were received.

A communication from the South Dakota State University relative to awards of the Spafford Memorial was read.

President Peabody suggested that as there are so many problems continually coming up to consider, that the Council meet at least once in three months. Take care of such problems as may be presented, economic, financial and legislative.

Dr. L. J. Pankow gave the report of the Advisory Committee co-operating with the State Board of Health.

WE RECOMMEND

1.

Better co-operation between the South Dakota State Board of Health and the South Dakota State Medical Association than has existed in the past.

2.

The uniform quarantine laws and regulations that are in accord with the contagion and severity of the particular disease, and such as are similar to and recommended by the U. S. P. H. regulations, be adopted by the South Dakota Public Health Board, for the regulations of the various County and City Health Boards of South Dakota.

3.

That the Public Health Activities of the various County, City and School Health Associations be under the direct supervision of local members of the South Dakota State Medical Association.

4.

That the indiscriminate abuse of the free clinic idea be discouraged and condemned.

5.

That anti-syphilitic medicine be furnished to the M. D. treating a luetic who is unable to pay the purchase price of the medicines.

6.

That this committee favors the passage, at an early date, of a suitable comprehensive Basic Science Law.

B. M. HART, M. D.,

E. W. JONES, M. D.,

L. J. PANKOW, M. D.

Upon motion made and carried, the report was adopted.

On behalf of the State Board of Health, Dr. B. M. Hart thanked the Association for adopting the report.

Motion was made and carried to adopt the JOURNAL-LANCET for one year as the Official Journal.

Motion to adjourn made and carried.

J. F. D. Cook, M. D.,
Secretary.

PRESIDENT'S ADDRESS*

By PERCY DICKENSON PEABODY, M.D.

WEBSTER, SOUTH DAKOTA

Custom has decreed that the president of our Association shall at the conclusion of his term in office deliver an address to the Association.

I infer the inauguration of this idea was to give him an opportunity to express to his associates his appreciation of the high honor conferred upon him.

In expressing that appreciation, I feel I have been doubly honored in being your president at this, our Golden Anniversary Meeting, when we are hosts to the Medical Association of our sister state of North Dakota.

Probably you all know that for the past few years it has been incumbent upon the president and secretary to visit at some time during the year the component district societies. Before our first visit of this kind, I recall having looked forward to it as a rather arduous task. But it took only one meeting to convince me that the real compensation in being president was to come from the privilege of attending these small group meetings. Not only have I gained in knowledge by listening to the many excellent papers and clinics presented at these meetings, but most of all have I profited by and enjoyed the opportunity of a more intimate contact with my colleagues over the state, than is permitted during the busy days at our annual gatherings.

From a mental review of the programs presented at those meetings and recalling the keen interest shown by the members, I am sure our men are mentally alert to the necessity of keeping abreast with the advancements in medical science. I am a little in doubt, however, whether, we as physicians, are alert to the damaging effects on organized medicine of the written, radioed, and legislative propaganda being carried on today.

Several of our popular magazines during the past year have printed articles derogatory to

physicians and hospitals. You have all read in newspapers during the recent months, articles in which the so-called high cost of medical care has been discussed, with no regard to the average physician's side of the story.

THE JOURNAL-LANCET in a late issue speaks of a book recently published by a New York firm in which it is stated, "This book aims to give to the layman the facts as to what goes on under cover of medical ethics, what abuses, what ignorance are connived at in its name." It goes on to state, "This book is written for the sole purpose of bettering the atrocious condition and should be read by every mature layman."

Writers who apparently value popularity more than the truth, have written articles slurring the general practitioner and belittling his importance to the community.

Great industrialists have stated that medicine should be put on a commercial basis and the same principles applied to it as are applied to mass production.

The radio now is producing a mass of propaganda, much of it detrimental to the science of medicine, and too often some doctor has permitted his name to be used by these advertisers in their attempt to convince the public of the genuineness of their wares. Do the advertisers so underrate the intelligence of physicians that they think we can be deluded into lending our endorsement to their preparations by using that time worn bait, "See your family physicians."

Radios, newspapers, and magazines have been informing the public for a year that 27,000 physicians have unanimously endorsed an article that is reputed, "To be kind to your throat."

It is rather a conjecture as to just how much medical science is raised in the public esteem by this type of endorsement.

A perusal of the bills introduced in state and national legislatures at the last sessions, seeking to regulate, restrict, control, and hamper the

*Read before the joint session of the North Dakota and the South Dakota State Medical Association, at Aberdeen, South Dakota, June 1, 2, 3, and 4, 1931.

physician in his work, should warn us of the possible dangers in that direction.

While it is true that there were some bills placed on the statute books favorable to and championed by medical associations, yet there were a goodly number antagonistic in character introduced and in many cases favorably acted upon.

It is no credit to the physicians of our state that a bill was introduced and passed at Pierre this last spring granting to chiroprodists the privilege to do minor surgery. Possibly, however, we should congratulate ourselves that another bill seeking to make it unlawful for a physician to charge more than twenty-five cents per mile in the performance of his duties, fell by the way-side.

Our country has been for some time and is in a period of general economic upheaval. Its solution is going to involve many readjustments. We, as medical men, cannot presume that we alone will be immune to the influences or effects of that readjustment.

Is medical science to be slowed up in the great strides forward it has been making, or can we continue to advance?

Is it not just as important for us to protect the investments we have made in our art, as it is for the financier or business man to protect his investments in the commercial world?

I do not believe all of the people who hatch up and foster these antagonistic moves are really seeking to tear down our medical structure, but there are many people in the world who get one angle of a subject and concentrate so intensely on it they are unable to view its relation to the whole. They represent a class of good intentioned people who are always making trouble for others as well as for themselves.

The medical profession has from time immemorial set for itself the highest standards in its labors for humanity. Can anyone question its great humanitarian interest, when they review the many sacrifices that have been made by some of its members in promoting and protecting public health alone, when others recall how its members have given unstintingly of their services to poor and rich alike, often with no thought of reward or remuneration?

Consider all that is being done in research and education by its members in the world today, in their efforts to gain knowledge of new and better ways to relieve human suffering and prolong life.

The readiness with which medical science has given its great discoveries to the world, and the

cheerfulness with which physicians give to their associates the benefits of their study and experience, should be sufficient to crystallize in the minds of an intelligent laity the fact that the practice of medicine is a profession and not a commercial undertaking, and should convince them that protection of their investment in health is best secured by regular periodic examinations by the well-trained family physician.

That the majority of the American public have not reached this stage of medical mindedness is self-evident. However, I do not feel we should become discouraged by this fact.

Medical publicity is a comparatively recent innovation. Uniformity of methods have not coördinated coöperation of the individual physicians, as well as of the state and national organizations. The American Medical Association is urging a campaign along these lines, and several state and local organizations are conducting campaigns of medical publicity.

We of South Dakota must put our shoulder to the wheel and do our part. Every physician privileged to practice within the state should make it his duty to become affiliated with his district society, forget petty jealousies for the sake of this greater cause, and realize it is only by presenting a united front that we can expect to gain for ourselves the enviable position we hope to attain.

Those of our members who have gone to the State Capitol during legislative sessions, to urge been definitely established and mistakes have probably been made, but if by education the public mind can be brought to a realization of the importance of preventive medicine, if by education we can inspire confidence and an understanding of the unselfishness of our purpose, and if the individual physician will equip himself to perform his part of the obligation, then will organized medicine stand before the world in the position it has always endeavored to attain, then will the doctor receive the respect due his position and the reward commensurate with the services he performs.

To me the solution of this problem is entirely up to ourselves. It will require the systematic action on some bill for the Association, will tell you they are always confronted with the statement your organization does not represent all the physicians of the state and the inference is that those who are not members are against the measure or at least do not approve of the organization.

This accusation should not be permitted to stand, and it need not stand if every active prac-

ticing physician will look at this problem in its true light.

An example of what opposition medical men can expect to meet is typified in what took place at the last session of the North Dakota legislature. The medical society of that state after a year's work got together what to me was an ideal Basic Science Law, but it was defeated by a vote of fifty-nine to fifty-one. I understand that the cults of every variety and the antivivisectionists united in every possible way to defeat this bill.

It is my opinion if we contemplate the presentation of a Basic Science Bill at the next session of our legislature, we should heed the advice of the North Dakota physicians and start our work early.

In closing I wish to express to the several committees on arrangements, my sincere personal appreciation of their splendid coöperation and the readiness with which they entered into every plan. Each member has been more than willing to do his share and I shall always remember my meetings with them with real pleasure.

FIFTIETH ANNIVERSARY OF ORGANIZED MEDICINE IN THE DAKOTAS*

By JAMES GRASSICK, M.D.

GRAND FORKS, NORTH DAKOTA

*"Hallow the Fiftieth Year!" the year of gold
By bards and prophets heralded of old!
Life's rosary of half a hundred years
Told, one by one, with joys and prayers—and tears—
Meet now in this, which claps the holy chain,
And in this hour we live them all again!*

—WILLIAM E. BARTON.

The South Dakota Medical Association and the North Dakota Medical Association celebrated the Fiftieth Annual Meeting of Organized Medicine in the territory of Dakota by meeting in joint session at the City of Aberdeen, South Dakota, June 1, 2, 3, and 4, 1931.

The initiative for this meeting came from the southern organization. At the 1930 annual meeting of the North Dakota Medical Association at Bismarck, North Dakota, a delegation from the South Dakota Medical Association appeared and presented a plea for a joint session of the two organizations. The matter was referred to a committee of which Dr. E. P. Quain, of Bismarck, North Dakota, was chairman. This committee later reported in part as follows:

"The Committee has accepted unanimously the kind offer officially presented to our Association by a Committee from the South Dakota State Medical Association to join with them in 1931 in the celebration of the Fiftieth Anniversary of Organized Medicine in the twin states, North and South Dakota, the meeting place to be Aberdeen, South Dakota. The Committee recommends that three members of our Association, W. H. Long,

M. D., Fargo; L. W. Larson, M. D., Bismarck; R. D. Campbell, M. D., Grand Forks, be appointed to act with three members from the South Dakota Medical Association on an Interstate Committee on arrangement, program and all other matters pertaining to the temporary union of our Associations; the Presidents and Secretaries of the two State Associations to be ex-officio members of the Interstate Committee."

The report was unanimously adopted. The members on the Interstate Committee representing the South Dakota State Medical Association were: W. A. Bates, M. D., Aberdeen; M. C. Johnston, M. D., Aberdeen; E. A. Pittenger, M. D., Aberdeen; and in addition, ex-officio, the President and Secretary of the Association. Thus were put in action the forces that were responsible for the joint meeting. As to those who had the matter in hand and who were directly responsible for its success there is but one word to say: The work was well done!

Dr. P. D. Peabody, President of the South Dakota State Medical Association, and Dr. A. Carr, Sr., President of the North Dakota State Medical Association, alternately presided at the scientific sessions.

The scientific program was outstanding. From its "Foreword" we quote:

"With due pride justified by achievement we open our Fiftieth Annual Session welcoming our members and friends to meetings teeming with interest. The scientific program consists of dry clinics each forenoon

*Read before the joint session of the North Dakota and the South Dakota State Medical Association at Aberdeen, South Dakota, June 1, 2, 3, and 4, 1931.

and papers with discussions each afternoon of the three days. The Section of Ophthalmology and Otolaryngology will meet with the North Dakota Academy of Ophthalmology and Otolaryngology."

Seldom has there been a program prepared with such a wealth of interesting material; seldom have there been secured so many outstanding leaders in medical thought to present the latest scientific findings; and seldom has there been such interest shown by those in attendance in eagerly following the presentations and discussions.

The business sessions of the two Associations were well attended. The work done will be given in detail in official reports. A matter of more than ordinary interest for the profession at large was the passage in the North Dakota Legislature at its last session of an act providing for the annual registration of physicians and surgeons. Its chief objectives are: to act as a police measure, primarily for the protection of the people, and secondly for the protection of legitimate and worthy practitioners; to give an annual check-up of practicing physicians and thus furnish a means by which irregulars may be detected and incompetents and undesirables eliminated; to give a correct roster of physicians in active practice in the state, noting those who have died, those who have left the state and those who have located therein during the year; and to give a fund, free from political interference, for maintaining an administrative bureau of medicine.

The entertainment features of the meeting were all that could be wished for and more! The proverbial "Key to the City" was given the visitors, and at every turn the spirit of hospitality and good-will was in evidence. The following deserve special mention: The Association banquet in the Presbyterian Church dining hall was a service excellent in its every appointment. The after-dinner program was in charge of the toastmaster, Dr. R. G. Mayer, of Aberdeen. With fitting preliminary remarks he introduced the following speakers: Dr. P. D. Peabody, Webster; Hon. Warren Green, Governor, Pierre; Dr. A. Carr, Sr., Minot; Dr. J. Grassick, Grand Forks. Touches of wit and humor interspersed with matters of more than usual weight made this part of the program generally acceptable to the five hundred guests. A dance at the Country Club immediately afterwards was much enjoyed by all.

The Woman's Auxiliary, said to be the first state auxiliary organized and still existing, kept the visiting ladies busily and happily engaged all of the time. Golf, silver teas, theatre parties,

musicales, cards, dancing, and courtesies ever dear to the feminine heart, combined to make the meeting a charmingly memorable one.

The buffet supper on the evening of June 2, as a get together, get acquainted, goodfellowship gathering was in a class by itself. The entertainment features were clean, snappy, and excellent and pleased everyone.

Golf fans were well taken care of at the links.

Since North and South Dakota were admitted into Columbia's family as twin states, it seems fitting indeed that their respective state medical organizations should come together after so many years of independent existence, even for a day. Meetings of this kind are extremely rare. The good-will they promote, the barriers of provincialism they destroy, the pleasing contacts and lasting friendships they make possible, and the fraternal spirit they foster are values that make them very much worth while.

As we trace the beginnings of organized medicine in the Dakotas, we find many factors with a more or less direct bearing on the question, but from whatever source they come or however varied they may be, it is to the intrepid, sturdy, virile pioneers that we must give the major credit, for it was they who interpreted the longings in terms of action and blazed out new trails in professional life.

The first Governor of Dakota Territory, Dr. Wm. Jayne, was a practicing physician of Springfield, Illinois. His record of service reads like a fairy tale, and one wonders how a man could find time for all he did. Among his other talents he had a knack of organization, for we find him with a few congenial comrades, in 1843, in college days, founding the Greek Letter Fraternity, Phi Alpha. What influence on the future organization of our profession this versatile Doctor-Governor may have had, we know not, but it is quite probable that he may have sown the seed that later took root.

In the early days of the territory, in the scattered communities where "two or three" like-minded physicians happened to be located, they would meet, discuss their common problems, and dream of bigger things in the days that were to come.

As the population of the territory increased and the physicians became more numerous, larger groups would be found. Of many of these meetings we know little or nothing, but enough of evidence is available to warrant us in saying that there were medical societies, so-called at Deadwood, Aberdeen, Bismarck, Fargo, Northwood,

and other centers at a very early date. These were in the very nature of things local in scope, but they show that the seeds of coöperation and organization, the beginnings of progress in any department of human endeavor had fallen on good ground and were showing signs of growth. While these intrinsic home forces were seeking expression, pressure from the outside was being felt. The American Medical Association, organized in 1847 as a representative body was gradually widening its sphere of activity and of influence. Its call for a united profession with a unified purpose was insistant, and was answered in the prairies of the West by the organization, on June 3, 1882, at Milbank, of the Dakota Medical Association. The first officers were: President, Dr. S. B. McGlumphy, Yaukton; First Vice President, Dr. O. S. Pine, Milbank; Second Vice President, Dr. A. Grant, Bath; Secretary, Dr. H. C. G. Rose, Milbank; Treasurer, Dr. O. S. Pine, Milbank; Delegates to A. M. A., Drs. McGlumphy and Pine.

Although the Association was organized in and for the Territory of Dakota, as a matter of fact very few physicians from the northern part became members. Distances and transportation facilities were factors that had to be reckoned with, and these were of such a nature that attendance at the meetings from outlying districts was practically prohibitive. The profession to the north in the meantime was counting its numbers, and in 1887 a few devoted members met at Larimore, and as a result of their deliberations the

North Dakota Medical Society came into being with Dr. J. G. Millspaugh, Park River, President; Dr. C. G. Conkey, Larimore, Vice President, and Dr. John Montgomery, Ardock, Secretary-treasurer.

Thus were launched on the sea of organized medicine the Sister Ships of the two Dakotas. Through all the intervening years they have weathered the gales of adverse criticism and professional unrest, and are still trim and staunch with "No Surrender" flying proudly from their mastheads. To have a vision is one thing, but to have the ability and foresight so to shape conditions that our dreams may take on form and substance is quite another. It took faith coupled with well directed effort for these adventurous souls, as they banded themselves together for social, economic, and professional betterment, to realize that they were building for the future. The store of the years has demonstrated that they builded aright, for the two Associations have steadily progressed, keeping pace with the advance of the medical profession throughout the world.

As we round out a half century of organized medicine in the Dakotas, we cannot better "Hallow the Fiftieth Year" than by rededicating ourselves and the profession we represent to the highest ideals of service; neither wavering in the pursuit of truth nor faltering in the purpose of giving the first fruits of knowledge for the weal of humanity.



DISTRICT AND COUNTY ROSTER

ABERDEEN DISTRICT MEDICAL SOCIETY—NO. 1

PRESIDENT		
Mayer, R. G.	Aberdeen	
VICE PRESIDENT		
Murphy, T. W.	Pierpont	
SECRETARY		
McCarthy, P. V.	Aberdeen	
Adams, J. F.	Aberdeen	
Ahlfs, J. J.	Conde	
Aldrich, H. H.	Andover	
Allen, J. M.	Rosholt	
Alway, J. D.	Aberdeen	
Baer, T. H.	Timber Lake	
Bates, W. A.	Aberdeen	
Bloemendaal, G. J.	Cresbard	
Brenckle, J. F.	Northville	
Bruner, J. E.	Frederick	
Calene, J. L.	Aberdeen	
Cook, J. F. D.	Langford	
Cooley, F. H.	Redfield	
Countryman, G. E.	Aberdeen	
Crain, F. M.	Redfield	
Creamer, F. H.	Dupree	
Dinsmore, W. E.	Claremont	
Dunn, J. E.	Groton	
Elward, L. R.	Ashton	
Farrell, W. D.	Aberdeen	
Gerdes, O. H.	Eureka	
Hart, R. S.	Groton	
Herman, H. J.	Webster	
Hill, Rob't.	Ipswich	
Hollinger, C. O.	Aberdeen	
Jackson, E. B.	Aberdeen	
Johnston, M. C.	Aberdeen	
Keegan, Agnes M.	Aberdeen	
King, H. I.	Aberdeen	
King, Owen	Aberdeen	
Kraushaar, F. J.	Aberdeen	
Kutnewsky, J. K.	Redfield	
Larsen, A. J.	Mobridge	
Lowe, C. E.	Mobridge	
Mahorner, H. R.	Aberdeen	
Mattson, Hamlin	Aberdeen	
Michael, F.	San Diego, Calif.	
Milan, M. Geo.	Aberdeen	
Miller, Frank	Aberdeen	
Murdy, B. C.	Aberdeen	
Murdy, R. C.	Aberdeen	
Olson, C. L.	McIntosh	
Olson, C. O.	Groton	
Pittenger, E. A.	Aberdeen	
Potter, G. W.	Redfield	
Ramsey, E. T.	Clark	
Ranney, T. P.	Aberdeen	
Rice, D. B.	Britton	
Sarchet, Geo. A.	Mobridge	
Sargent, C. E.	Isabel	
Stevens, E. E.	Eureka	
Totten, F. C.	Lemmon	
Twining, G. H.	Mobridge	
Walker, J. F.	Lemmon	
Weishaar, C. H.	Aberdeen	
White, W. E.	Ipswich	
Whiteside, J. D.	Aberdeen	
Whitney, L. D.	Aberdeen	
Wilson, R. D.	Aberdeen	

WATERTOWN DISTRICT MEDICAL SOCIETY—NO. 2

PRESIDENT		
Nelson, E. N.	Watertown	
(Deceased)		
VICE PRESIDENT		
Lockwood, J. H.	Henry	
SECRETARY		
Duncan, Wm.	Watertown	
Ash, J. C.	Garden City	
Bartron, H. J.	Watertown	
Bates, J. S.	Clear Lake	
Brown, R. H.	Watertown	
Campbell, R. F.	Watertown	
Christensen, A. H.	Clark	
Crawford, J. H.	Watertown	
Finnerud, H. M.	Watertown	
Freeburg, H. M.	Watertown	
Hammond, M. J.	Watertown	
Johnson, A. E.	Watertown	
Koren, F.	Watertown	
Kenney, H. T.	Watertown	
Magee, W. G.	Watertown	
McIntyre, P. S.	Bradley	
Paulson, A. J.	Watertown	
Richards, G. H.	Watertown	
Rowe, A. N.	Estelline	
Scallin, Paul R.	Clark	
Sherwood, H. W.	Doland	
Staley, F. H.	Vienna	
Tarbell, H. A.	Watertown	
Vaughn, J. B.	Castlewood	
Williams, C. A.	Doland	

MADISON DISTRICT MEDICAL SOCIETY—NO. 3

PRESIDENT		
Westaby, J. R.	Madison	
VICE PRESIDENT		
Baughman, D. S.	Madison	
SECRETARY		
Davidson, Magni	Brookings	
Engelson, C. J.	Brookings	
Gulbrandsen, G. H.	Brookings	
Hoagland, C. C.	Madison	
Jordan, L. E.	Chester	
Kellogg, H. E.	Brookings	
Miller, E. C.	Brookings	
Miller, H. A.	Brookings	
Sherwood, C. E.	Madison	
Tank, M. C.	Brookings	
Tillisch, Henrik	Brookings	
Torwick, E. E.	Volga	
Westaby, R. S.	Madison	
Whitson, G. E.	Colman	

PIERRE DISTRICT MEDICAL SOCIETY—NO. 4

PRESIDENT		
Morrissey, R. J.	Pierre	
VICE PRESIDENT		
McLaurin, A. A.	Pierre	
SECRETARY		
Robbins, C. E.	Pierre	
Hart, B. M.	Onida	
Martin, H. B.	Harrold	
Northrup, F. A.	Pierre	
Riggs, T. F.	Pierre	
Stout, E. T. (Deceased)	Pierre	

HURON DISTRICT MEDICAL SOCIETY—NO. 5

PRESIDENT		
Cogswell, M. E.	Wolsey	
VICE PRESIDENT		
Sewell, H. D.	Huron	
SECRETARY		
Saxton, W. H.	Huron	
Buchanan, R. A.	Huron	
Burman, G. E.	Carthage	
Faust, J. H.	Huron	
Feige, C. A.	Canova	
Griffith, W. H.	Huron	
Grosvenor, L. N.	Huron	
Hagin, J. C.	Miller	
Mattlock, W. L.	Huron	
Paddleford, J. F.	Miller	
Saylor, H. L.	Huron	
Shirley, J. C.	Huron	
Sprague, B. H.	Huron	
Taylor, E. B.	Huron	
Thomas, Benj.	Huron	
Tschetter, J. S.	Huron	
Willoughby, F. C.	Howard	
Wood, T. J.	Huron	
Wright, O. R.	Huron	

MITCHELL DISTRICT MEDICAL SOCIETY—NO. 6

PRESIDENT		
Jones, E. W.	Mitchell	
VICE PRESIDENT		
Malloy, J. F.	Mitchell	
SECRETARY		
Gillis, F. D.	Mitchell	
Arntsen, L. L.	Mitchell	
Ball, W. R.	Mitchell	
Bobb, C. S.	Mitchell	
Bobb, B. A.	Mitchell	
Crawford, R. A.	Chamberlain	

Delaney, Wm. A.	Mitchell
Dick, L. C.	Spencer
Dickenson, W. E.	Letcher
Gifford, A. J.	Alexandria
Hoyne, A. H.	Salem
Jenkinson, H. E.	Wessington Springs
Jones, A. L.	Corsica
Kimble, O. A.	Murdo
Kelly, R. A.	Mitchell
Lloyd, J. H.	Mitchell
Mabee, Don R.	Mitchell

Mabee, O. J.	Mitchell
Maytum, W. J.	Alexandria
McClallen, S. A.	Kennebec
Payne, R. H.	Tripp
Rohwer, R. T.	Mitchell
Tobin, F. J.	Parkston
Tobin, L. W.	Mitchell
Trcon, Fred	Chamberlain
Waldner, J. L.	Parkston
Young, E. M.	Mitchell

SIOUX FALLS DISTRICT MEDICAL SOCIETY—NO. 7

PRESIDENT	
Hanson, O. L.	Valley Springs
VICE PRESIDENT	
Zimmerman, G. E.	Sioux Falls
SECRETARY	
Forsberg, C. Wm.	Sioux Falls
Billingsley, P. R.	Sioux Falls
Billion, T. J.	Sioux Falls
Brandon, P. E.	Sioux Falls
Craig, Allen Arthur	Sioux Falls
Craig, D. W.	Sioux Falls
Culver, C. F.	Sioux Falls
Day, H. J.	Sioux Falls
DeVall, F. C.	Garretson
Donahoe, S. A.	Sioux Falls
Donahoe, W. E.	Sioux Falls
Dott, R. T.	Sioux Falls
Eagan, J. B.	Dell Rapids

Egan, M. H.	Sioux Falls
Erickson, O. C.	Sioux Falls
Erickson, Eshil	Garretson
Fulford, G. H.	Sioux Falls
Gage, E. E.	Sioux Falls
Gregg, J. B.	Sioux Falls
Groebner, O. A.	Sioux Falls
Grove, A. F.	Dell Rapids
Hannon, L. J.	Hartford
Housman, Wm.	Sioux Falls
Hummer, H. R.	Canton
Hyden, Anton	Sioux Falls
Kellar, S. A.	Sioux Falls
Keller, W. F.	Sioux Falls
Lamb, Hazel	Sioux Falls
Moe, A. J.	Sioux Falls
Meyer, H. C. E.	Sioux Falls
Mullen, R. W.	Sioux Falls
Nessa, N. J.	Sioux Falls

Nilsson, F. C.	Sioux Falls
Opheim, O. V.	Sioux Falls
Pankow, L. J.	Sioux Falls
Parke, L. L.	Canton
Perkins, E. I.	Sioux Falls
Putnam, E. D.	Sioux Falls
Reagan, R.	Sioux Falls
Rector, Lee P.	Montrose
Rider, A. S.	Flandreau
Roberts, W. P.	Sioux Falls
Sackett, R. F.	Parker
Stenberg, E. S.	Sioux Falls
Stern, M. A.	Sioux Falls
Stevens, R. G.	Sioux Falls
Subera, H. W.	Sioux Falls
Tufts, A. H.	Sioux Falls
Turner, J. F.	Canton
Van Demark, G. E.	Sioux Falls

YANKTON DISTRICT MEDICAL SOCIETY—NO. 8

PRESIDENT	
Moore, F. A.	Yankton
VICE-PRESIDENT	
Ohlmacher, J. C.	Vermilion
SECRETARY	
Hohf, J. A.	Yankton
Abts, F. J.	Yankton
Adams, G. S.	Yankton
Albertson, G. R.	Vermilion
Beall, L. F.	Irene
Benesh, L. C.	Freeman
Bigler, Lottie G.	Yankton
Blezek, F. M.	Tabor

Brookman, L. J.	Vermilion
Burkland, P. R.	Vermilion
Bury, Chas. L.	Geddes
Bushnell, Wm. F.	Elk Point
Crecelius, H. A.	Lakeport, Calif.
Cruckshank, Thos.	Vermilion
Duguid, J. O.	Springfield
Freshour, Ina M.	Yankton
Gross, C. C.	Yankton
Hanson, H. F.	Vermilion
Hill, John F.	Yankton
Hohf, S. M.	Yankton
Johnson, Geo. E.	Avon
Joyce, E.	Hurley

Kauffman, E. J.	Marion
Keeling, C. M.	Springfield
Kalayjian, D. S.	Parker
Klima, H.	Tyndall
Landmann, G. A.	Scotland
Leighton, I. W.	Scotland
Morehouse, E. M.	Yankton
Smith, F. C.	Yankton
Stansbury, E. M.	Vermilion
Trierweiler, J. E.	Yankton
Willhite, F. V.	Redfield
Williams, D. B.	Yankton
Williams, F. E.	Wakonda
Wipf, A. A.	Freeman

BLACK HILLS DISTRICT MEDICAL SOCIETY—NO. 9

PRESIDENT	
Jernstrom, R. E.	Rapid City
VICE-PRESIDENT	
Owen, N. T.	Rapid City
SECRETARY	
Radusch, F. J.	Rapid City
Chassell, J. L.	Belle Fourche
Craner, Harold L.	
	La Oroya, Peru, S. A.
Davis, J. H.	Belle Fourche

Dean, A. C.	Hot Springs
Doyle, J. I.	Rapid City
Ewald, Paul P.	Lead
Fleeger, R. B.	Lead
Geyerman, P. T.	Hot Springs
Hare, Carlyle	Spearfish
Howe, F. S.	Deadwood
Hummer, F. L.	Lead
Jackson, R. J.	Rapid City
Lister, F. E.	Faith
Mattox, N. E.	Lead

Miller, G. F.	Spearfish
Minty, F. W.	Rapid City
Morse, W. E.	Rapid City
Morsman, C. F.	Hot Springs
Newby, H. D.	Rapid City
Pemberton, M. O.	Deadwood
Ramsey, Guy	Philip
Rogers, J. S.	Hot Springs
Stewart, J. L.	Nemo
Threadgold, J. O.	Belle Fourche
Walsh, J. M.	Rapid City

ROSEBUD DISTRICT MEDICAL SOCIETY—NO. 10

PRESIDENT	
Quinn, R. J.	Burke
VICE-PRESIDENT	
Salladay, I. R.	White River

SECRETARY	
Overton, R. V.	Winner
Bryant, F. A.	Herrick
Carmack, A. O.	Colome

Kenaston, H. R.	Bonesteel
Malster, R. M.	Carter
Matousek, W. J.	Gregory
Walters, S. J.	Winner
Wilson, F. D.	Winner

KINGSBURY CO. DISTRICT MEDICAL SOCIETY—NO. 11

PRESIDENT		
	Bostrom, A. E.....	De Smet
VICE-PRESIDENT		
Peeke, A. P.....	Dyar, B. A.....	De Smet
SECRETARY		
Hopkins, N. K.....	Gross, D. W.....	Iroquois
	Irvine, Geo. B.....	Tempe, Ariz.
	Jamieson, G. V.....	De Smet
	Scanlon, D. L.....	Volga

WHETSTONE VALLEY DISTRICT MEDICAL SOCIETY—NO. 12

PRESIDENT		
Cliff, F. N.....	Brown, A. E.....	Webster
	DeTuncq, A. E.....	Milbank
VICE-PRESIDENT		
Hedemark, T. A.....	Flett, Chas.	Milbank
	Harris, H. G.....	Wilmot
SECRETARY		
Gregory, D. A.....	Hawkins, A. P.....	Waubay
	Hayes, Clara E.....	New York, N. Y.
	Jacotel, J. A.....	Milbank
	Jenkins, P. B.....	Waubay
	Karlins, W. H.....	Webster
	Peabody, H. C.....	Webster
	Peabody, Percy D.....	Webster
	Pearson, A. W.....	Peever
	Pfister, F. F.....	Webster

ALPHABETICAL ROSTER

Abts, F. J.....	Yankton	*Craife, F. M.....	Redfield	Gross, C. C.....	Yankton
Adams, G. S.....	Yankton	Crane, H. L., LaOroya, Peru, S.A.		Gross, D. W.....	Iroquois
Adams, J. F.....	Aberdeen	*Crawford, J. H.....	Watertown	Grosvenor, L. N.....	Huron
Ahlfs, J. J.....	Conde	Crawford, R. A.....	Chamberlain	Grove, A. F.....	Dell Rapids
Albertson, G. R.....	Vermilion	Creamer, F. H.....	Dupree	Gulbrandson, G. H.....	Brookings
Alldrich, H. H.....	Andover	Creelius, H. A.....	Lakeport, Calif.	Hagin, J. C.....	Miller
Allen, J. M.....	Rosholt	Cruikshank, T.....	Vermilion	Hammond, M. J.....	Watertown
Alway, J. D.....	Aberdeen	Culver, C. F.....	Sioux Falls	Hannon, L. J.....	Hartford
Aritsen, L. L.....	Mitchell	Davidson, Magni	Brookings	Hanson, H. F.....	Vermilion
Ash, J. C.....	Garden City	Davis, J. H.....	Belle Fourche	Hanson, O. L.....	Valley Springs
Baer, T. H.....	Timberlake	Day, H. J.....	Sioux Falls	Hare, Carlyle	Spearfish
Ball, W. R.....	Mitchell	Dean, A. C.....	Hot Springs	Harris, H. G.....	Wilmot
Bartron, H. J.....	Watertown	De Tuncq, A. E.....	Milbank	Hart, B. M.....	Onida
Bates, J. S.....	Clear Lake	De Vall, F. C.....	Garretson	Hart, R. S.....	Groton
Bates, W. A.....	Aberdeen	Delaney, W. A.....	Mitchell	Hawkins, A. P.....	Waubay
Baughman, D. S.....	Madison	Dick, L. C.....	Spencer	Hayes, Clara E.....	N. Y. City
Beall, L. F.....	Irene	Dickinson, W. E.....	Lechter	Hedemark, T. A.....	Revillo
Benesh, L. C.....	Freeman	*Dinsmore, W. E.....	Claremont	Herman, H. J.....	Webster
Bigler, Lottie G.....	Yankton	Donahoe, W. E.....	Sioux Falls	Hill, John F.....	Yankton
Billingsley, P. R.....	Sioux Falls	Donahue, S. A.....	Sioux Falls	Hill, Robert	Ipswich
Billion, T. J.....	Sioux Falls	*Dott, R. T.....	Sioux Falls	Hoagland, C. C.....	Madison
Blezek, F. M.....	Tabor	Doyle, J. I.....	Rapid City	Hohf, J. A.....	Yankton
Bloemendaal, G. J.....	Cresbard	*Duguid, J. O.....	Springfield	Hohf, S. M.....	Yankton
Bobb, B. A.....	Mitchell	Duncan, Wm.....	Watertown	Hollinger, C. O.....	Aberdeen
Bobb, C. S.....	Mitchell	Dunn, J. E.....	Groton	Hopkins, N. K.....	Arlington
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Brandon, P. E.....	Sioux Falls	Eagan, J. B.....	Dell Rapids	Howe, F. S.....	Deadwood
Brenckle, J. F.....	Northville	Egan, M. H.....	Sioux Falls	Hoyle, A. H.....	Salem
Brookman, L. J.....	Vermilion	Elward, L. R.....	Ashton	Hummer, F. L.....	Lead
Brown, A. E.....	Webster	Engelson, C. J.....	Brookings	Hummer, H. R.....	Canton
Brown, R. H.....	Watertown	Erickson, Eshil	Garretson	Hyden, A.....	Sioux Falls
Bruner, J. E.....	Frederick	Erickson, O. C.....	Sioux Falls	Irvine, G. B.....	Tempe, Ariz.
Bryant, F. A.....	Herrick	Ewald, P. P.....	Lead	Jackson, E. B.....	Aberdeen
Buchanan, R. A.....	Huron	Farrell, W. D.....	Aberdeen	Jackson, R. J.....	Rapid City
Burkland, P. R.....	Vermilion	Faust, J. H.....	Huron	Jacotel, J. A.....	Milbank
Burman, G. E.....	Carthage	Feige, C. A.....	Canova	Jamieson, G. V.....	De Smet
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Bushnell, W. F.....	Elk Point	Fleeher, R. B.....	Lead	Jenkinson, H. E.....	Wess. Springs
Calene, J. L.....	Aberdeen	Flett, Chas.	Milbank	Jernstrom, R. E.....	Rapid City
Campbell, R. F.....	Watertown	Forsberg, C. W.....	Sioux Falls	Johnson, A. Einar.....	Watertown
Carmack, A. O.....	Colome	Freeburg, H. M.....	Watertown	Johnson, G. E.....	Avon
Chassell, J. L.....	Belle Fourche	Freshour, L. L. M.....	Yankton	Johnston, M. C.....	Aberdeen
Christenson, A. H.....	Clark	*Fulford, H. H.....	Sioux Falls	Jones, A. L.....	Corsica
Cliff, F. N.....	Milbank	Gage, E. E.....	Sioux Falls	Jones, E. W.....	Mitchell
Cogswell, M. E.....	Wolsey	Gerdes, O. H.....	Eureka	Jordan, L. E.....	Chester
Cook, J. F. D.....	Langford	Geyerman, P. T.....	Hot Springs	Joyce, E.....	Hurley
Cooley, F. H.....	Redfield	Gifford, A. J.....	Alexandria	Kalayjian, D. S.....	Parker
Countryman, G. E.....	Aberdeen	Gillis, F. D.....	Mitchell	Karlins, W. H.....	Webster
Craig, Allen A.....	Sioux Falls	Gregg, J. B.....	Sioux Falls	Kauffman, E. J.....	Marion
Craig, D. W.....	Sioux Falls	Gregory, D. A.....	Milbank	Keegan, Agnes	Aberdeen
		Griffith, W. H.....	Huron	Keeling, C. M.....	Springfield
		Groebner, Otto H.....	Sioux Falls		

* Honorary

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 Kellar, W. F. Sioux Falls
 Kellogg, H. E. Brookings
 Kelly, R. A. Mitchell
 Kenaston, H. R. Bonesteel
 Kenney, H. T. Watertown
 Kimble, O. A. Murdo
 King, H. I. Aberdeen
 King, Owen Aberdeen
 Klima, H. Tyndall
 Koren, Finn Watertown
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 Stephens, E. E. Eureka
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 Williams, F. E. Wakonda
 Willoughby, F. C. Howard
 Wilson, F. D. Winner
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 Wright, O. R. Huron
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 Zimmerman, Goldie Sioux Falls



COMMON FALLACIES IN THE FIELD OF PROCTOLOGY

BY HARRY F. BAYARD, M.D.

MINNEAPOLIS, MINN.

Rectal examination has recently become a fixed part of the examination routine for the well trained man, but even now there are many instances when this routine is not adhered to rigidly. Some examiners feel embarrassed in asking the patient to submit to an examination of this particular part of his anatomy, and the patient even while he is relating a syndrome of rectal complaints is secretly hoping the doctor will not examine his rectum. In the case of female patients this mutual embarrassment is multiplied a good deal. It is under these circumstances that the habit of simply prescribing some astringent and narcotic ointment flourishes. Close routine examinations in any field breed a desire for more information on problems which may be encountered; benefit to both the patient and the physician results from this practice.

Because of the neglect and lack of interest so frequently exhibited in this work several erroneous beliefs persist which have been quoted in texts and quite generally accepted as true. In the case of some of these beliefs a simple review of any carefully compiled statistics concerning the subject in hand will serve to show the error. In other instances observation of cases coming for rectal treatment shows the mistake made. The more common of these misbeliefs will be discussed in this paper.

Probably the most general of these misconceptions is the idea that the so-called injection treatment for hemorrhoids is close to being fool-proof and a type of treatment which may legitimately be practiced from reading the literature alone. This type of treatment has been used by irregular practitioners for many years, and during the past few years it has found favor with many physicians who had formerly not been using it. The indications and contraindications for its use have not been generally well known, and the treatment although giving excellent results in selected cases, has been needlessly given a bad reputation because of its frequent misapplication.

Even when a suitable case has been selected for treatment a poor result often ensues as a result of inadequate attention following the treatment. Sloughs may occasionally occur in the areas injected even in the hands of the most experienced surgeon, but I think at times that some surgeons

are laboring under the illusion that a slough is the object of the injection. The chemical should institute a sterile inflammatory process resulting in perivascular fibrosis, while a slough results only in the event that too much of the chemical was injected or that it was injected too close to the mucosal surface. Apparently it is a common practice to inject these cases and forget them, no check up observation being thought necessary.

Should a slough have occurred, careful attention is necessary to prevent abscess formation or a cellulitis. Keeping the rectum empty so that the seepage of feces over the slough does not occur is an important item, and irrigation of the anal canal after stool with water as hot as one's hand will bear is a valuable measure. These chemically induced sloughs are at times rather slow in healing, but delayed closure usually means a badly infected wound. I have recently seen a case which was injected elsewhere for hemorrhoids in which a widespread rectal and pelvic cellulitis ensued, septicemia followed, and eventually practically the whole lowest third of the rectum sloughed out. This dramatic series of events resulted simply because the injected areas were not kept under observation, and when infection occurred the surgeon was in no position to control it.

Another form of disaster is sometimes seen after the commonly used phenol in various oil solutions is injected. A firm nodule forms at the site of each phenol injection in the submucosa, and in cases where the areas injected have been close together they may coalesce forming a thick ridge rather than a nodule. These lesions are attached to the mucosa and to the muscularis but are covered by an intact mucosa. Observation of some of these lesions which had been injected many years before leads one to believe the lesion to be permanent in individuals in whom it occurs. Microscopic sections of these nodules show a picture not unlike tuberculosis. Giant cells are found with an infiltration of lymphocytes and larger clear pale cells which are probably plasma cells. Any foreign body in the tissues is apt to excite such a picture.

In certain instances where these tumefactions have grown large and coalesced, a stricture will have been formed at the point just above the

pectinate line. Inasmuch as this type of stricture yields poor results to any method of treatment short of colostomy, it is obvious that an ounce of prevention is worth a pound of cure. These lesions have never been seen following the injection of a five per cent solution of quinine and urea, and this fact is regarded as sufficient warrant for adhering exclusively to this solution. With these two types of complication in mind it may be readily seen that the injection treatment of hemorrhoids is far from being a fool-proof maneuver.

The subject of benign strictures of the rectum and rectosigmoid has been introduced into this discussion by virtue of its resultant relationship to injection treatment for hemorrhoids. The idea is widely held that lues III is the common etiological agent in rectal strictures and it is to this that I wish to take exception. In a review of a series of rectal strictures it was found that forty-seven per cent gave a history of operative work on the rectum, while a few gave a history of radium application within the rectum, labor in which the fetal head was against the perineum an abnormally long time, and burns within the rectum following the use of overly hot irrigations. Some ten per cent of strictures have followed the injection of phenol for hemorrhoids while active amebiasis was found in several. Evidence of lues either in the history, Wassermann reaction or physical findings was present in twenty-two per cent of the cases of rectal stricture, but other data in their physical findings proved to be more in direct relation to their rectal trouble than the fact that they had or in the past had had some evidence suggesting lues. Even in the proved luetic a rectal stricture must not be assumed to be specific, for the luetic person has the same chance of incurring a rectal stricture due to other causes as has the nonluetic.

While twenty-two per cent is approximately twice the figure conceded for the incidence of lues among the general population, it must be realized that of those patients constituting the twenty-two per cent were many unproved cases of lues. It is highly probable that only some ten per cent could be proved to have been at one time or another luetic. Forty-eight per cent of those having a positive history of syphilis also had had a rectal operation.

Chronic ulcerative colitis with its frequent remissions and exacerbations during which scar tissue and ulceration alternately form, plays an etiological rôle in rectal strictures which has been underestimated. Any trauma with a resulting

break in the mucosa with subsequent infection and ulceration seems to be the lesion predisposing to stricture formation. By far the greatest proportion of benign strictures are annular and only a very few caused by an eccentric lesion. This is in contradistinction to what one would expect of lues; a gumma formation with later healing and scar contraction would be expected as the mechanics of a luetic stricture. It can be seen from this evidence that a multiplicity of exciting causes rather than any one specific cause is indicated, with infection, ulceration, and scar tissue formation as the direct cause of benign rectal strictures.

One of the commonly accepted misconceptions in the minds of many surgeons is that an anal fissure can be cured in a fair percentage of cases by any means short of radical excision of the ulcer bearing quadrant of the anal ring. Caustics, the actual cautery, curettage, dilatation of the anus, and any number of astringent ointments and lotions have been used and have given relief at times but recurrence is the rule in these cases. The reason for this is not difficult to see.

A fissure is an open wound in an infected field; its edges are thickened and the irritation of the ulcer and the lymphocytic infiltration and fibrosis produce spasm in the underlying sphincter ani muscle. At the inner or mucosal end of the fissure is usually found an anal papilla which has hypertrophied and become fibrosed as the result of infection in the anal crypt at the mucocutaneous junction. This cryptitis was the original cause of the anal fissure, and its continued presence is a good guarantee of recurrence of the fissure. At the external end of the fissure there may be found frequently an external hemorrhoid, the so-called "sentinel pile" overhanging the edge of the fissure. The overhanging sentinel pile and the hypertrophied papilla both prevent free drainage from the infected wound they border.

Abscess formation will frequently occur under these circumstances and once formed the abscess may do one of several things. It may rupture and empty externally. It may burrow under the skin margin and form an abscess off from the ulcer. This abscess may rupture back into the ulcer leaving only a persistent subcutaneous sinus leading out from the fissure, or it may rupture through the skin and form a tract through which a probe may be passed to the original source of the trouble, the anal fissure. Palliative treatment with phenol or silver nitrate, healing and anesthetic ointments, or any treatment short of excision will only close over these sinus tracts and abscesses as well as the indurated, deeply infected

fissure itself; recurrence is inevitable unless the ulcer and any sinus tracts or abscesses are excised.

It is recommended that excision of a fissure be started at the mucosal edge, carried wide of the actual fissure wound, and posteriorly far enough that the posterior part of the wound will be the last to heal. This excision will produce a broad, flat wound which will drain posteriorly and form a scar which will leave the wound area the strongest quadrant of the anal circle. Complete incision of the sphincter is rarely neces-

sary, but sectioning part of the muscle is frequently necessary to produce a flat wound which will drain well. This muscle is frequently hypertrophied and spastic as a result of the constant irritation from the ulcer, and partial incision tends to relieve this. Following this type of excision I have never seen a fissure recur.

SUMMARY

The injection treatment of hemorrhoids is not a fool-proof procedure. Widespread pelvic cellulitis and stricture formation may occur in cases improperly cared for.

There is no evidence to support the widespread idea that rectal strictures are usually luetic.

Only wide excision will give any assurance against recurrence of anal fissures.

ROENTGENOLOGIC STUDIES AT THE BEDSIDE*

By WALTER H. UDE, M.D.

Roentgenologist, Minneapolis General Hospital.

MINNEAPOLIS, MINNESOTA

Bedside roentgenography finds its wider application in hospitalized cases, but is also practicable in the patient's home. In the latter it is somewhat impeded by the electrical power supply and by the size of the fuses in the household lighting circuit. In addition there is the factor of difficulty of transporting a heavy transformer and a breakable tube. The total time consumed in carrying out this procedure is also an important factor, as it necessarily increases considerably the cost of production of the roentgenograph. Better final results are undoubtedly obtained by transporting the patient to the hospital in an ambulance where a more adequate examination can be made without increasing the total cost to the patient, even when hospitalization and ambulance service is included.

In the hospital, bedside roentgenography is occupying a most important role. This has been made possible by improvements in equipment and in technique. The modern bedside roentgenographic unit should include controls for the regulation of voltage and milliamperage. It should have a timing mechanism which will allow a fair degree of accuracy in the technique. It should be equipped with a flexible tube-stand so that it can be conveniently used around complicated fracture beds. The unit should be operated on a power line which is used for no other purpose, the wire being at least No. 10 in size. If elevators and other motors are operated from the same wire, the results will be very unsatisfactory. An

alternating current is essential, as it eliminates the loss of power in the converter and avoids the extreme bulkiness of such an apparatus. This last factor is probably first in importance in the production of a good end-result.

Bedside fluoroscopic examinations are possible but impracticable. Hospital wards or rooms are not easily darkened, and hand fluoroscopes are unsatisfactory. Modern units, however, are constructed to allow the tube to be placed under the bed or in any desired position for this purpose. It is usually much more satisfactory to move the patient to the X-ray department for this type of work.

Bedside roentgenographic work finds its widest application in the study of the bony framework of the body in connection with fractures. Films of the extremities are practically always satisfactory, even when made through dense plaster casts or splints. The skull, the spine and the pelvis may also be studied in this manner, but wherever possible the initial study should be done in the department where a Potter-Bucky diaphragm is available. The ribs and sternum are also not so readily studied by this method, although rib fractures are often demonstrated sufficiently well for diagnosis.

Very satisfactory films may be made of the chest in both the antero-posterior and lateral positions, although fine detail of the lung structures is not well demonstrated because of the length of the exposure time. The method finds its widest

*From the Departments of Roentgenology of the Minneapolis General Hospital and the University of Minnesota. Read before the Hennepin County Medical Society, April 22, 1931.

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WHAT PRICE HEAT?

During the three heat waves which occurred in the months of June and July of 1931, hundreds of deaths were reported as directly due to the heat. Hundreds of other deaths resulted with heat as a contributory cause. Inefficiency caused an inestimable loss to the country. For more than a decade, we have known that with an atmospheric temperature of approximately 80 and a relative humidity of 86 per cent, the efficiency or the working capacity of the human body is decreased approximately 26 per cent. Such a temperature is significant when compared with those experienced during the heat waves this summer.

In Aberdeen, South Dakota, the maximum atmospheric temperature was 108, in Sioux Falls, South Dakota it was 104, and in Minot, Bismarck, Grand Forks, and Fargo, North Dakota, it was 106. In Minneapolis, Minnesota, the maximum temperature was approximately 104 degrees.

Most of the deaths caused by the heat could have been prevented and a large share of the lost efficiency to the human family could have been saved if the country had been prepared to condition the air in the places where people live and work. The man or woman who works outdoors can tolerate high temperatures for a short time each day, even through the working hours of a day, provided he can then retire to a home where the temperature and humidity are right and where he can secure a sufficient amount of rest a night to insure the necessary repair of his body; but the person who works in the heat, then returns to a home where the temperature is so high that he cannot rest properly, not only becomes highly inefficient but also jeopardizes his health. Proper conditioning of the air in factories, schools, etc., where people work would prevent practically all

of the inefficiency now experienced during summer months. The loss of 26 and more per cent of the efficiency of workmen in factories would quickly pay for the necessary equipment to condition the air.

Already physicians are treating persons suffering from hay fever. During the remainder of the summer and early fall many thousands of such cases will be treated. Many physicians themselves and members of their families will require treatment, all because of our failure to properly condition the air in our homes and places where we work. Physicians have attempted to desensitize hay fever patients to the pollens to which they are particularly hypersensitive, but the honest physician, who has done a good deal of this work, must admit that this treatment is not entirely satisfactory. A good percentage of the physicians themselves resort to a change of atmospheric conditions; that is, during the hay fever season they go to some part of the country where the pollen to which they are sensitive does not pollute the air. This is bad economy not only for physicians but also for all who find it necessary to leave their homes during the hay fever season. There are devices now on the market which will filter the air admitted to the hay fever sufferer's room and which will create a slightly positive atmospheric pressure in the room so that the outside polluted air is not permitted to enter through the leaks around closed windows and doors. Such a device protects the intake of air so that all pollen is filtered out. When this is installed in the patient's bedroom and another in his office, he may remain at home during the hay fever season with practically no symptoms of hay fever. In other words, he has sufficient tolerance for pollens so he can breathe polluted air except during working and sleeping hours without producing symptoms. No doubt, this is the coming treatment of hay fever, and it is pointing the way for the conditioning of air in all places where we live and work.

During the fall, winter, and spring physicians

will treat thousands of cases of colds and pneumonia. They will see many die from pneumonia. They will see an appalling amount of disability caused by acute upper respiratory infections. Most of this could be prevented by conditioning the air in the places where people live and work. Much of the inefficiency, illness, and many of the deaths in this country each year are due to atmospheric conditions. It is illogical that we should have learned to condition milk to make it safe for human consumption through pasteurization, etc., that we should have learned to condition water to make it safe for human consumption through filtration, chlorination, etc.; and at the same time that we should have overlooked conditioning of air to the extent that we willingly breathe it into our respiratory tract with all of its contamination and that we are willing to allow our bodies to suffer and die because of extremes of temperature and humidity. Even primitive man learned to protect himself against cold. This practice has been continued through civilization except for sporadic treatment of certain diseases. Head and others have shown that the cold air treatment of pneumonia is inferior to other methods of treatment. This is equally true in the treatment of tuberculosis and other respiratory diseases.

While man was willing to protect his body against the cold in order to be comfortable, there has existed a peculiar attitude concerning protection against the heat. Of course, shade has been sought, fans have been used, but only recently has there been agitation for a system of cooling the air in the places where we live and work. The first office building in the world to be supplied with conditioned air is in San Antonio, Texas. One occasionally enters a department store or a theater building where the air is cooled during the summer months, but these are so rare that they are talked about and frequented by large numbers of people during the heat waves. During the heat waves many persons would go to theaters immediately after lunch and remain there until evening. They did not object to seeing the performance more than once as long as they could escape the heat. The criticism voiced was that there is too sudden change in coming from a cold building to the outside air with a temperature sometimes more than 100 degrees. The question is often asked, "Is this harmful?" The same persons rarely complain or question the advisability of coming from an outside temperature of zero or below in the winter time to an overheated building where the temperature might range from 80

to 90 degrees or more. One is just as harmful as the other.

In other words, it is a physical impossibility to condition the outside air. It has always been contaminated and always will. It has always had marked fluctuations in temperature and humidity in most parts of the world and probably always will. The solution lies in a device sufficiently inexpensive which can be installed in homes, offices, schools, factories, etc., and which will deliver to the rooms of such buildings air that is free from pollen with a temperature of approximately 68 degrees both in winter and summer and a relative humidity of 40 to 50 per cent. Such a device will provide for the necessary circulation of air. When this is done our buildings will be so constructed that they are air tight. There will be no opportunity for leakage around doors and windows. This is not an idle dream; it is already in effect but on such a limited scale that very few people in the United States are profiting from its advantages. The medical profession should lead the vanguard by calling attention everywhere to the necessity of conditioned air in the prevention of inefficiency, illness, and death in the human family. J. A. M.

"LOOKING IN THE MIRROR"

With the consent of the editor, Dr. E. G. Balsam of Billings, Montana, an editorial from the May number of "Progress of the Medical Association of Montana," is here reprinted in full. There is a thought contained in this article that deserves wider publicity. It applies as well to the medical profession in other States as it did to the practitioners of Montana.

LOOKING IN THE MIRROR

"A portion of the membership of the Medical Association of Montana is continuously trying to increase the confidence of the public in our profession. Another portion, through fake practices, is destroying this trust and sending people to the cults. It would not be so disagreeable if the consequences were visited upon themselves alone, but the whole body suffers.

When called in case of sickness, the method used is something as follows: An examination is made accompanied with many 'ahs' and 'ohs' and much head shaking. Then the one in charge is taken to another room, or even before the patient, is told some very exaggerated serious diagnosis and reminded that, although it is late to do anything, he is the only one possessed with the knowledge

and ability to do it. Fuss and feathers galore. In a few days the patient is restored to health due entirely to the superhuman efforts of the wonderful doctor.

That goes nicely with the family and friends, and the doctor is widely advertised, until some inquisitive busybody comes to get details of the marvelous restoration. In comparing this affair with some other similar, the family is finally convinced that, instead of double pneumonia with typhoid, it was merely a bad cold with constipation. Trust in that doctor is shattered, the advertising changed to ridicule, and the whole profession is unjustly and innocently included. Such conduct is comparable to the ever present diagnosis of dislocated vertebrae, more damnable because of the supposedly higher education and ideals and the Hippocratic oath.

No practice built upon this method endures for long. It may return large dividends for a time. Later, when financial needs press, it is only natural that ILLEGITIMATE work follows. Then in the eyes of the people and of the cults the mighty have fallen.

So long as the regular profession harbors members with such manners, it is useless to point at the cults with scorn and expect to have the help of the people in their destruction. Let us take inventory and start a new era. Medicine, one of the oldest and best of the professions, and the only one of the healing groups doing things for the welfare of the people does not merit degradation by the quacks in its organization and we, its disciples, are negligent if we do not point the way upward. If more than pointing is demanded, let us clean house, so that the public trust may be justified."

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. E. L. Tuohy, Duluth, is back at his offices again, after a two months' vacation in Europe.

Dr. George H. Richards, Watertown, was recently married to Miss Florence Rau, of Milbank, S. D.

Dr. and Mrs. Richard Scammon, of the University of Minnesota, are off for a two months'

European trip.

Dr. E. H. Boerth, who recently was licensed to practice in North Dakota, has opened offices at Buffalo, N. D.

Dr. T. J. Telford, who has been in practice at Edgerton, for several years has decided to move to Litchfield, Minn.

Dr. R. T. O'Neill, formerly located at Lewistown, has opened offices for general practice at Harlowton, Montana.

Dr. Charles C. Gault, a well known physician of Owatonna, was instantly killed at Cass Lake, Minn., in an airplane crash.

Dr. A. L. Arends, Wright, has changed his location and will continue his general practice at Askor, Minn.

Dr. J. R. Soltero, Moore, Montana, has moved his offices to Lewistown, and will continue his general practice.

Dr. G. H. Spielman, Mandan, N. D., will erect a new building in that city devoted to the use of the medical profession.

Announcement has been made of the marriage of Dr. L. H. Kronmiller, Butte, Mont., to Miss Mary Domitrovich of that city.

Dr. Edwin L. Goss, formerly located at Belcourt, N. D., has been transferred to the Pine Ridge Indian Agency, at Kyle, S. D.

Dr. Walter Judge, Graceville, Minn., has decided to locate at Milbank, S. D., where he has secured offices for general practice.

Dr. S. S. Blacklock, well known physician of Hibbing, Minn., will be married in September to Mrs. Edna Wishgar, Cincinnati, Ohio.

Dr. B. E. O'Reilley, who has been in active practice at Minot, N. D., has moved to St. Paul, where he will continue in general practice.

Dr. J. J. McKinnon, one of the pioneer physicians of Wadena, Minn., died last month from a stroke of apoplexy, at the age of 68 years.

Dr. Claude M. Pierson, who has been in active practice at Wheaton, Minn., for several years, died recently after an illness of several months.

Dr. August S. Eggers, Grand Forks, who has recently returned from a year's travel in Europe, will resume general practice at his old home city.

Dr. R. K. Miller, Detroit, Mich., has become associated with Dr. C. C. Hoagland, at Madison, S. D. Dr. Miller is a specialist in eye, ear and throat.

Dr. C. C. Hoagland, Madison, S. D., is plan-

ning on spending a year in California, where he will do graduate work at the University of California.

Dr. B. W. Kelly, Aitkin, Minn., has been named as the head of the hospital unit for the Army Reserve Corps for Northeastern Minnesota.

Five hundred delegates are expected at the annual meeting of the Mississippi Valley Conference on Tuberculosis, to be held at St. Paul on September 21-23. Dr. W. J. Marcley, Minneapolis, president, and Dr. E. A. Meyerding, St. Paul, secretary, who will be pleased to send any information required about the meeting.

Dr. L. H. Braafladt, Minot, N. D., has sold his practice and moved to Sacramento, Cal., where he will be connected with one of the leading hospitals of that city.

Dr. R. G. Scherer, Morgan, Minn., has sold his practice to Dr. W. E. Johnson, of Caledonia, Minn., and has accepted a three year Fellowship at the Mayo Clinic.

Drs. N. T. Owen, Rapid City, and H. J. Barton, Watertown, have been reappointed members of the South Dakota State Board of Health, for a term of five years.

A cottage has been built at Camp Grassick on Lake Isabel, N. D., for the use of tubercular children. This camp was named in honor of Dr. James Grassick of Grand Forks.

Dr. T. J. Williams, who has been in active practice at Great Falls, Mont., for past two years, has moved to Charlottesville, Va., where he has taken a position at the State University.

Dr. W. E. Macklin, Minneapolis, has decided to open offices for general practice at Litchfield, Minn. Dr. Macklin is a graduate of the University of Minnesota Medical School.

The Northwestern District Medical Society held their July meeting at the Minot Country Club and were guests of Dr. F. E. Wheelon, who served one of his famous "Mulligan Banquets."

Dr. Rex E. Grater, Bismarck, was recently married to Miss Lois Howard of Minneapolis, and are spending a few weeks in Northern Minnesota. Dr. Grater is a graduate of the University of Chicago.

Dr. E. T. Stout, Pierre, S. D., was killed last month when his car collided with another auto and overturned crushing his chest. Dr. Stout was physician for the Pierre Indian School and also surgeon for the U. S. Veterans Bureau.

The thirtieth anniversary of the Fergus Coun-

ty Medical Society was held at Lewistown, Mont., this month, which brought out the largest attendance since the society was organized. The program was complete and most enjoyable.

Six applicants were granted licenses to practice medicine in South Dakota last month by the State Board of Medical Examiners as follows: W. F. Bollinger, Bridgewater; W. A. Dolley, Rapid City; P. F. O'Connor, Watertown; P. H. Rosendahl, Stickney; J. U. Taylor, Toledo, Ohio; and Joseph Tfscheter, Hurton.

On July 8, 1931, Emma Marska, alias Emma Mars entered a plea of guilty to violating the Basic Science Law. The complaint was filed by the State Board of Medical Examiners. Mrs. Marska had her place of business at Minneapolis, and specialized in ailments of women, her knowledge having been obtained in Russia where she was a midwife and where she claimed her husband was a physician. Judge Leary of the District Court sentenced the defendant to six months in the Minneapolis workhouse. The sentence was suspended on the one condition that the defendant absolutely refrain from practicing healing in this state in the future. The Medical Board has had this case re-checked since the above date and no evidence of law violation has been discovered.

MISCELLANEOUS

SOUTHERN MINNESOTA MEDICAL MEETING Faribault, August 24, 1931

PROGRAM

MORNING SESSION

- 8:00 A. M.—School for Feeble-minded.
Demonstration of mental cases—J. M. Murdoch, M. D., and Staff
- 9:00 A. M.—Shattuck School
Pediatric clinic—E. D. Anderson, M. D., Minneapolis
X-ray demonstration—R. G. Allison, M. D., Minneapolis, and C. G. Sutherland, M. D., Rochester
Varicose vein clinic—R. C. O. Logeheil, M. D., Minneapolis
Demonstration of psychometric tests—Fred Kuhlman, M. D., Minneapolis (Director Division of Research of the Minnesota State Board of Control)
Dermatologic clinic—P. A. O'Leary, M. D., and Staff, Rochester.
- 11:00 A. M.
Pathologic demonstration—H. E. Robertson, M. D., Rochester, and A. M. Snell, M. D., Rochester
Hematology demonstration—F. J. Heck, M. D., Rochester, and C. H. Watkins, M. D., Rochester
Unusual case reports—Discussion led by Moses Barron, M. D., Minneapolis
Case of a large gall stone causing intestinal obstruction—B. J. Gallagher, M. D., Waseca
Case of streptococic septicemia with recovery—

O. J. Swenson, M. D., Waseca

Sarcoma of the jaw in a three-weeks' old infant, and albuminuria in pregnancy—C. C. Leck, M. D., Austin

Others to be announced later.

AFTERNOON SESSION

2:00 P. M.

Normal and abnormal motility syndromes of the upper urinary tract with indications for drug and sympathectomy therapy—W. P. Herbst, M. D., Minneapolis

Selection of patients for prostatectomy—Hugh Cabot, M. D., Rochester

The injection treatment of hemorrhoids: some fallacies and complications—Walter A. Fansler, M. D., Minneapolis

Carcinoma of the bronchus—P. P. Vinson, M. D., Rochester

Analysis of 600 cases of spinal anesthesia—W. C. Stillwell, M. D., Mankato

Paper—S. W. Harrington, M. D., Rochester

Treatment of pneumonia—H. A. Reimann, M. D., Minneapolis

And others

BANQUET

6:30 P. M.—Banquet Hall, Shumway Hall, Shattuck School

President's address—J. T. Schlesselman, M. D., Mankato

Address of welcome—C. W. Newhall, Headmaster, Shattuck School

Remarks—W. A. Rohlf, M. D., Waverly, Iowa, (President, Iowa State Medical Association)

Talk on Russia illustrated by movie films—T. L. Birnberg, M. D., St. Paul Amphitheater, Shumway Hall, Shattuck School

NORTHERN MINNESOTA MEDICAL ASSOCIATION, HIBBING, MINN., ON SEPTEMBER 14, 1931

PROGRAM

Clinico-Pathological Conference—8:30 A. M. to 9:30 A. M.

Specimens furnished through the courtesy of St. Lukes and St. Mary's Hospitals, Duluth, Minn.

Case presentation by Dr. M. M. Fischer, Duluth.

Pathological reports and specimen demonstration by Dr. George L. Berdez, Duluth.

X-Ray film discussions by Dr. Thos. Gage Clement and Dr. J. R. McNutt, of Duluth.

Discussions led by Dr. E. L. Touhy, Duluth.

Paper—"Ectopic Pregnancy"—Drs. R. L. Bowen and T. A. Estrem, Hibbing—9:30 A. M. to 9:50 A. M.

Paper—"Multiple-Sclerosis"

Dr. L. R. Gowan, Duluth—9:50 A. M. to 10:10 A. M.

Paper—"Fractures of Tibia & Fibula, Involving the Joints"—Dr. C. W. More, Eveleth—10:10 A. M. to 10:30 A. M.

Paper—"Pediatric Subject"—

Dr. O. W. Rowe, Duluth—10:30 A. M. to 10:50 A. M.

INTERMISSION 15 MINUTES

Paper—"Common Pathology of the New Born"

Dr. Thomas Myers, St. Paul—11:05 A. M. to 11:25 A. M.

Paper—"Pathology of Peptic Ulcer"

Dr. D. C. Collins, Rochester—11:25 A. M. to 11:45 A. M.

LUNCH

Trip on observation car into Hull-Rust Mine. (Leave Androy Hotel in automobiles for the mine at 12:45)

Paper—"Modern Anaesthesia"

Dr. J. S. Lundy, Rochester—2:30 P. M. to 2:50 P. M.

Paper—Drs. R. B. Bray and W. H. Long, Fargo, North Dakota—2:50 P. M. to 3:10 P. M.

Paper—"Remote Effects of Head Injuries"

Dr. W. H. Hengstler, St. Paul—3:10 P. M. to 3:30 P. M.

Paper—"Comparison of Number of Physicians in Different Sections of the United States, and also Europe"—Dr. N. O. Pearce, Mpls.—3:30 P. M. to 4:00 P. M.

Paper—"What the American Doctor sees in Europe"

Dr. A. M. Snell, Rochester—4:00 P. M.

BANQUET at 6:30 or 7:00 P. M.—Drs. M. S. Henderson, E. A. Meyerding, and Mr. Mackey.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS, JUNE 30, 1931

BY EXAMINATION

(June)

Name	School and Date of Graduation	Address
Abbott, Clyde Berthold.....	U. of Minn., M.B., 1930; M.D., 1931.....	Springfield, Minn.
Anderson, Waldo Paul.....	U. of Minn., M.B., 1931.....	1110 Glenwood Ave., Minneapolis, Minn.
Atkinson, Walter.....	Georgetown U., M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Bagley, Elizabeth Colville.....	U. of Mich., M.D., 1927.....	501 Woodland Ave., Duluth, Minn.
Bulinski, Theodore John.....	U. of Minn., M.B., 1931.....	University Hospital, Minneapolis, Minn.
Chancellor, Orville Kelsey.....	U. of Minn., M.B., 1931.....	Northwestern Hosp., Minneapolis, Minn.
Crombie, Francis Joseph.....	U. of Minn., M.B., 1930; M.D., 1931.....	Miller Hospital, St. Paul, Minn.
Daley, David Micheal.....	U. of Minn., M.B., 1930; M.D., 1931.....	Lewiston, Minn.
Frary, Louise Grace.....	U. of Minn., M.B., 1930; M.D., 1931.....	5049 Dupont Ave. S., Minneapolis, Minn.
Goldish, Daniel Richard.....	U. of Minn., M.B., 1931.....	617 17th Ave. E., Duluth, Minn.
Hinckley, Robert George.....	U. of Wis., M.D., 1929.....	1616 6th St. S. E., Minneapolis, Minn.
Kilgard, Ross Miller.....	U. of Minn., M.B., 1931.....	5333 Columbus Ave., Minneapolis, Minn.
Lang, Leonard Adam.....	U. of Minn., M.B., 1928; M.D., 1929.....	University Hospital, Minneapolis, Minn.
Minor, Walter Jerome.....	U. of Minn., M.B., 1930; M.D., 1931.....	909 St. Anthony Ave., St. Paul, Minn.

Noth, Paul Henry.....	U. of Minn., M.B., 1931.....	4010 Pillsbury Ave., Minneapolis, Minn.
Oeljen, Siegfried C. G.....	U. of Minn., M.B., 1931.....	St. Luke's Hospital, Duluth, Minn.
Pearson, Bror Folke.....	U. of Minn., M.B., 1931.....	1621 7th St., Minneapolis, Minn.
Quannstrom, Virgil E.....	U. of Minn., M.B., 1931.....	1310 Pine St., Brainerd, Minn.
Robinson, Lloyd Wayne.....	U. of Colo., M.D., 1929.....	110 2nd Ave. S. E., Rochester, Minn.
Ruggles, George McCue.....	U. of Minn., M.B. & M.D., 1930.....	Asbury Hospital, Minneapolis, Minn.
Schultz, Peter J.....	U. of Minn., M.B., 1931.....	512 Delaware S. E., Minneapolis, Minn.
Skaug, Harold M.....	U. of Minn., M.B., 1931.....	1310 E. 18th St., Minneapolis, Minn.
Smith, Vernon D. E.....	U. of Minn., M.B. & M.D., 1931.....	339 Lowry Med. Arts Bldg., St. Paul.
Sorteberg, Edward Donald.....	U. of Minn., M.B., 1931.....	429 Union St. S. E., Minneapolis, Minn.
Thompson, Floyd Ammann.....	U. of Minn., M.B., 1931.....	University Hospital, Minneapolis, Minn.
Thorsness, Edwin Trueman.....	Marquette, M.D., 1927.....	Mayo Clinic, Rochester, Minn.
Walsh, William Edward.....	Marquette, M.D., 1928.....	Naval Hospital, Great Lakes, Ill.
Watson, C. Gordon.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Duluth, Minn.
Weed, Vernon A.....	U. of Minn., M.B., 1930.....	916 E. 15th St., Minneapolis, Minn.
Youngs, Nelson A. Miles.....	U. of Minn., M.B., 1930; M.D., 1931.....	901 East River Road, Minneapolis, Minn.

BY RECIPROCITY

Graff, Richard John.....	Loyola Univ., M.D., 1930.....	New Ulm, Minn.
Johnson, Ralph Bernard.....	Northwestern, M.D., 1929.....	Lanesboro, Minn.
Killion, John Jackson.....	U. of Tenn., M.D., 1930.....	Pine River, Minn.
McElligott, Edmund Wright.....	Rush, M.D., 1927.....	936 Goodrich Ave., St. Paul, Minn.
Steinberg, Charles Leo.....	U. of Colo., M.D., 1928.....	Morris, Minn.

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Wilkinson, H. Weldon.....	U. of Minn., M.B., 1929; M.D., 1930.....	Mayo Clinic, Rochester, Minn.
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**LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD
OF MEDICAL EXAMINERS, MAY 4, 1931**

BY EXAMINATION

(April)

Name	School and Date of Graduation	Address
Arneill, James Rae, Jr.....	Yale, M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Farber, Kent Walker.....	U. of Pa., M.D., 1928.....	608 6th St. S. W., Rochester, Minn.
Bosland, Howard Glenn.....	U. of Minn., M.B., 1930.....	General Hospital, Minneapolis, Minn.
Broadie, Thomas Edward.....	Indiana Univ., M.D., 1928.....	Ancker Hospital, St. Paul, Minn.
Callaghan, Desmond Hays.....	U. of Minn., M.B., 1931.....	St. Mary's Hospital, Duluth, Minn.
Christenson, Grant Reynolds.....	U. of Minn., M.B., 1930.....	304 Harvard St., Minneapolis, Minn.
Cronk, Charles Frederick.....	U. of Minn., M.B., 1930.....	Cameron, Wis.
Edwards, Richard Graham.....	U. of Minn., M.B., 1930.....	General Hospital, Minneapolis, Minn.
Eneboe, John Bernard.....	U. of Minn., M.B., 1930.....	615 S. 1st Ave., Sioux Falls, S. D.
Foor, Clifford Gault.....	U. of Cincinnati, M.B., 1928; M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Gaida, Joseph Benedict.....	U. of Minn., M.B., 1931.....	St. Mary's Hospital, Minneapolis, Minn.
Gamm, Kenneth E.....	U. of Minn., M.B., 1931.....	1266 Charles St., St. Paul, Minn.
Gerdes, Maude Marguerite.....	U. of Minn., M.B., 1929; M.D., 1930.....	Zeeland, No. Dak.
Gifford, Byron Lee.....	U. of Minn., M.B., 1931.....	Battle Lake, Minn.
Haugen, John Amberg.....	U. of Minn., M.B., 1930; M.D., 1931.....	97 Orlin Ave. S. E., Minneapolis, Minn.
Howell, William Ladelle.....	Baylor Univ., M.D., 1928.....	219 6th Ave. S. W., Rochester, Minn.
Jump, Walter Clinton.....	U. of Minn., M.B., 1931.....	St. Mary's Hospital, Duluth, Minn.
Lietzke, Erwin Thomas.....	U. of Minn., M.B., 1930.....	1515 Charles St., St. Paul, Minn.
Lippmann, Elmer Wesley.....	U. of Minn., M.B., 1930.....	St. Luke's Hospital, Duluth, Minn.
Lynch, Helen Margaret.....	U. of Minn., M.B., 1930.....	Cedar Falls, Iowa
McCann, Eugene J.....	U. of Minn., M.B., 1930.....	General Hospital, Minneapolis, Minn.
McNeely, Cecelia Alma.....	U. of Toronto, M.B., 1926.....	Women's Hospital, Philadelphia, Pa.
Martin, William Joseph, Jr.....	U. of Pa., M.D., 1927.....	Mayo Clinic, Rochester, Minn.
Merrill, Elisabeth.....	U. of Minn., M.B., 1930.....	707 Goodrich Ave., St. Paul, Minn.
Mistachkin, Norman Leonard.....	U. of Minn., M.B., 1930; M.D., 1931.....	St. Louis, Mo.
Murray, Stephen E.....	U. of Pa., M.D., 1928.....	102 2nd Ave. S. W., Rochester, Minn.
Parsons, Ralph Ludvig.....	U. of Minn., M.B., 1930; M.D., 1931.....	Monterey, Minn.
Peterson, Vernon L.....	Washington Univ. Sch. of Med., M.D., 1929.....	932 2nd St. S. W., Rochester, Minn.
Popp, Walter Charles.....	U. of Pittsburgh, M.D., 1929.....	718 5th St. S. W., Rochester, Minn.
Rea, Charles Ethan.....	U. of Minn., M.B., 1930.....	255 W. George St., St. Paul, Minn.
Simons, Leander Theodore.....	U. of Minn., M.B., 1930.....	Chaska, Minn.
Thayer, Ellsworth Albert.....	U. of Minn., M.B., 1931.....	2712 Bryant Ave. S., Minneapolis, Minn.
Tift, Cyril Richardson.....	U. of Minn., M.B., 1930.....	St. Mary's Hospital, Duluth, Minn.
Tuohy, Edward Lawrence.....	U. of Minn., M.B., 1930; M.D., 1931.....	University Hospital, Minneapolis, Minn.
Weis, Benjamin Anthony.....	U. of Minn., M.B., 1930.....	Miller Hospital, St. Paul, Minn.
Whitlock, Merle Eugene.....	Indiana Univ., M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Wilson, Viktor Ottman.....	U. of Minn., M.B., 1930.....	Ancker Hospital, St. Paul, Minn.
Zachman, Leo Lahr.....	U. of Minn., M.B., 1930.....	1253 Grand Ave., St. Paul, Minn.

BY RECIPROCITY

Hardgrove, Maurice A. F.....	Columbia Univ., M.D., 1928.....	Mayo Clinic, Rochester, Minn.
McQuarrie, Irvine.....	Johns Hopkins, M.D., 1921.....	Univ. of Minn., Dept. of Pediatrics, Minneapolis, Minn.

NATIONAL BOARD

Rewbridge, Allan George.....	Harvard, M.D., 1926.....	823 Nicollet Ave., Minneapolis, Minn.
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ROENTGENOLOGIC STUDIES AT THE BEDSIDE

(Continued from Page 521)

application in cases of pneumonia, pleural effusion, or post-operative pulmonary complications. The lateral films in cases of pneumonia have helped us to demonstrate very early consolidations in the retrocardiac areas, and have shown that so-called "hilum" or "central" pneumonia is in reality a posterior triangular consolidation. The antero-posterior film may allow a provisional interpretation of the size and type of enlargement of the cardiac shadow, but a teleoroentgenogram at the bedside is not practicable.

Bedside films of the abdomen may be of great help in diagnosis. They are especially applicable in post-operative cases where bowel obstruction is suspected. Gas distension of the stomach and small or large bowel can usually be demonstrated and interpreted with a high degree of accuracy. Abnormal abdominal masses, including enlargement of liver, kidneys, spleen or uterus, may be shown in this manner. Foreign bodies such as gun-shot fragments may be located. Complete gastro intestinal or gall bladder studies are not satisfactory at the bedside. Small amounts of barium may be given by mouth, and by repeated films one may note emptying of the stomach and distribution of the barium through the intestinal tract. This should not be allowed to delay the surgical interference in cases of intestinal obstruction.

In the use of the bedside roentgenographic facilities of a hospital, the indications for this type of study should be clearly kept in mind. These indications may be summarized as follows: (1) fracture cases which cannot be moved from the bed; (2) acute infectious diseases, in which exposure is to be avoided; (3) contagious diseases, where the spread of the disease is to be avoided; (4) post-operative cases. As films made under more ideal conditions in the X-ray department are almost always superior in diagnostic quality to bedside films, the latter should only be used when the patient's immediate welfare demands that he be submitted to as little disturbance as possible.

CLASSIFIED ADVERTISEMENTS

Locum Tenens Wanted:

For first two weeks in September. Well qualified. Speak German. Can furnish car. Best references. Address box 854, care of this office.

Location Wanted

Physician, 25 years experience, seeks office association with an established physician or surgeon practicing in Minneapolis. Address Box 845, care of this office.

Technician Desires Position:

Competent young woman with experience desires position as X-ray and laboratory technician in doctor's office, clinic or hospital. Address box 856, care of this office.

Wanted to Buy for Cash

Used equipment, in good condition for a 20-bed hospital. Including beds, tables, operating tables, sterilizers, etc. Itemize what you have, giving prices on whole or part. Address box 843, care of this office.

Position Wanted

Laboratory and x-ray technician, graduate of x-ray and laboratory technicians training course of a St. Paul hospital, desires position in Hospital or Clinic. Experience, one year in clinic in South Dakota. Good references. Address Miss V. Norquist, 907 11th St., Rapid City, S. D.

For Sale:

Owing to drouth and grasshoppers, am closing hospital in South Dakota. Offering for sale at a bargain, complete equipment, all in good condition. Beds, kitchen ware, operating room instruments, complete physiotherapy line, including X-ray and office furniture. Must sell all or none. Original cost \$6,500. Priced to sell at \$3,000. Address box 855, care of this office.

For Rent

Desirable office space in brand new modern building on busy business and street car intersection in South Minneapolis. Waiting room is shared by busy dentist, established seven years on corner. Doctors' offices are occupied at present, but owing to other appointments they will be available for rent August 1st. Long lease. Office is equipped. Rent reasonable. Competition light. For information address Box 850, care of this office.

For Rent

Doctor's office occupied by prominent physician. Office elegantly equipped. Individual treatment room, laboratory, etc. Reception room is shared with dentist and other physician. A new up-to-the-minute medical building, located in one of the best business intersections of good residential district. This is an unusual proposition and must be seen to be fully appreciated. Address Box 837, care of this office.

Practice for Sale

Growing practice in southeastern South Dakota, city of 7,500, new 150 bed hospital. Complete office equipment with laboratory. Splendid equipped x-ray and physiotherapy departments in building under your supervision. Am leaving to do post graduate work. Chance to make part or all office rent assisting in surgery. Wonderful for man starting out. Must be cash deal. Address Box 852, care of this office.

THE JOURNAL-~~L~~ANCET

Represents the Medical Profession of
Minnesota, North Dakota, South Dakota, and Montana

The Official Journal of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

New Series
Vol. LI, No. 17

MINNEAPOLIS, MINN., SEPTEMBER 1, 1931

Per Copy, 10c
A Year, \$2.00

HEMORRHOIDECTOMY—AN ANATOMICAL METHOD*

By W. A. FANSLER, M.D., F.A.C.S.

Assistant Professor of Surgery, University of Minnesota

MINNEAPOLIS, MINNESOTA

In general, the results of hemorrhoidectomy have been more unsatisfactory than those of almost any other ordinary procedure the surgeon is called upon to perform. This is true cosmetically, functionally, and as regards to permanency of results. Several factors combine to bring this about. First a lack of interest in endeavoring to understand the subject of hemorrhoids, and second, the acceptance of certain standardized procedures. Each case is made to fit the procedure rather than intelligently to endeavor to use a procedure which fits the case. The two time honored operations are ligation, and the clamp and cautery. These serve well enough where the classic picture of three hemorrhoids, one anteriorly and one on each side laterally presents itself. Unfortunately, in my experience, this classic picture is not the most frequent one. More often there is a complete "doughnut" like ring of varicose vessels completely surrounding the anus and lower rectum. Even though there may be certain areas where these vessels bulge out more prominently, still there is a complete ring of varicose vessels. Unless all of these varicosities are removed or destroyed and the proper amount of redundant tissue excised, skin tags, stricture, a

moist anus or recurrence of the hemorrhoids is certain to result.

In the operation, either by ligation or by clamp and cautery, it is customary to grasp the hemorrhoidal tissue with a forcep, evert it outside the anus, and then clamp or ligate it. This procedure does two things which make an anatomically correct operation difficult or impossible. The inversion of an internal hemorrhoid distorts its anatomical relationship, and the necessary traction almost always ruptures the external and anal hemorrhoidal vessels, so that a doughnut like ring of tissue appears surrounding the anus. This consists of everted anal mucosa and perianal skin overlying ruptured vessels and extravasated blood. With this picture the judgment of Solomon is scarcely sufficient to tell just what to remove and what to leave. It becomes a matter of guess and chance. With this experience in mind it occurred to me that a method could be devised whereby it would be possible to remove these varicose vessels and any other excess tissue as it lay in normal anatomical relationship, and before the field was distorted by traction and trauma and the extravasated blood of ruptured vessels. In this way it would be possible to judge much more accurately just what to remove and what to leave, and the danger of tags, stricture, and incomplete removal would be much lessened.

*Read at a joint session of the North Dakota and the South Dakota State Medical Associations, at Aberdeen, South Dakota, June 2, 3, and 4, 1931.

With these basic principles in mind I have worked out a procedure which I believe worthy of calling to the attention of the profession. Certain ideas along this line have been advanced before, but as far as I know no operation has been previously devised involving all the principles of the one to be described. I believe this operation to be an improvement over anything evolved thus far.

The portion of the procedure which I believe to be most important is the devising of an anoscope which permits the easy isolation of a distinct portion of hemorrhoidal tissue, in its normal position, and renders its dissection and removal a simple matter. This anoscope is 6 cm. long and has a uniform diameter of 3.5 cm. A slot 2 cm. wide extends the entire length of the instrument. An obturator exactly fitting the instrument facilitates its insertion into the anus.

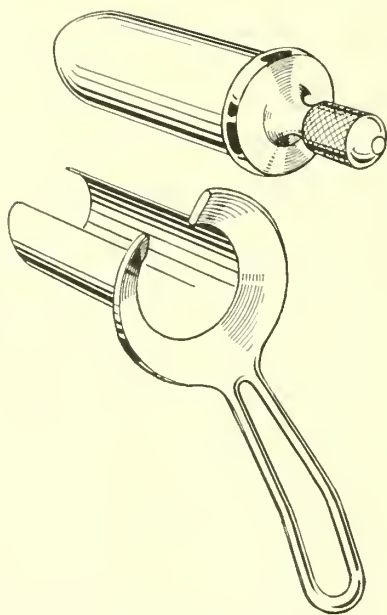


Fig. I. Fansler Operative Speculum.

Briefly the operative procedure is as follows: The anoscope is inserted into the rectum and the obturator withdrawn. The quadrant of hemorrhoidal tissue to be dealt with is then isolated in the slot. The area is about one fourth of the anal circumference. The diameter of the anoscope is large enough to give ample room for dissecting out of any tissue to be removed. Only the tissue in the slot presents itself to the operator, so he is not confused by the other hemorrhoids crowd-



Fig. II. The hemorrhoid to be removed is isolated in the slot of the Arioscope.

ing into the operative field. After the extent of the pathology is determined a stitch of plain catgut is inserted just above the upper limit of the varicosed vessels. This one stitch will often control any bleeding of consequence, but should there be any spurting vessels after the hemorrhoid is removed, additional stitches may be



Fig. III. A plain catgut stitch is placed through the upper pole of the hemorrhoid.

placed. Dissection is now begun at the lowermost margin of the varicosed vessels, usually well outside the anus, and carried up to the stitch inside the rectum. Only the tissue which appears redundant is removed, ample skin and mucosa being left so that there is no danger of stricture.



Fig. IV. Dissection is begun at the lower most portion of the hemorrhoid and carried up to the stitch.

The strip of tissue is usually rather narrow in width, but the dissection is carried deeply enough so that the fibers of the sphincter are exposed, which means that no vessels are left in the base

of the hemorrhoid. With this strip a portion, but not all of the hemorrhoidal vessels in this quadrant of the anus is removed. Since some vessels are sure to be left, the edges of the wound are now retracted laterally, and these remaining varicose vessels of the quadrant removed or destroyed with scissor points. In cases where only external hemorrhoids are present the anoscope is not used. Four or five radiating incisions are made, their edges retracted and the vessels destroyed down to the sphincter as has just been described. If there are bleeding vessels they are ligated. Otherwise, the wound is left entirely open. We believe there is less chance of serious infection, that postoperative pain is less and healing more rapid than when the wounds are sutured. Each quadrant of the anus and rectum are dealt with in a similar manner.

By this method one may be certain that all varicose vessels are removed or destroyed and no tissue is sacrificed which should not be removed. The percentage of permanent cures is certainly higher than where the usual operative procedures are employed.

UNDULANT FEVER IN CHILDREN

By R. E. PRAY, M. D.

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FARGO, NORTH DAKOTA

The firm belief, so determinedly published, emphasizing the fact that children were not subject to undulant fever, and that this was the best proof that milk was not a source of the disease, has had much to do with the tardiness on the part of the medical profession in accepting its existence and failure to help stimulate public sentiment for more protection through our health laws. Even now, with the literature full of discussion of the disease, there are many of the profession who fail to accept its prevalence as a fact, and continue to diagnose the cases symptomatically by names such as rheumatic fever, latent tuberculosis, malnutrition, influenza, cyclic vomiting, etc., or during the quiescent period, advise discarding the thermometer. Undulant fever is here in North Dakota to an extent that will give us equal incidence with Iowa, Ohio, and other states, where the public health and sentiment have stirred up the necessary interest.

Our search for undulant fever in children began quite accidentally two years ago. A girl, eleven years of age, was ill with a condition diagnosed influenza. Complicating this there existed quite a definite sinusitis. Three weeks after the sinus condition had failed to account for it, a fever of 99° to 100° continued to run daily. The father of the girl insisted we search further for the cause, as the patient showed no desire to eat and failed to convalesce. An examination at this time brought out the fact that at intervals her left ankle became painfully tender and swollen. The spleen was found to be about two fingers' breadth below the left costal margin. The heart had a low grade endocarditis. The laboratory reports gave 60 per cent hemoglobin and a leukocyte count of 6,600. Her Mantoux 1-1000 was negative. Typhoid and paratyphoid were negative. Finally, blood was submitted for the tularemia and undulant fever tests, resulting in what we now have learned was

a very positive undulant agglutination at one to six forty. But at that time even the State Laboratory was not able to call this a positive result. Much searching of the literature finally brought all concerned to the conclusion that it was a definite positive.

A sister of the girl was subject to spells of "acidosis" with vomiting. These were always accompanied by fever, and sometimes by a condition thought to be influenza. She was six years of age, pale and malnourished. Her mother worried considerably about the nosebleeds that occurred without apparent cause. She tired very easily and was subject to quite severe sweats. It was then found that she ran some fever every day, even during the quiet intervals. During the attacks, abdominal pains, very closely simulating appendicitis occurred, except that there was no rigidity. Examination of the heart showed a definite myocarditis, but there was no liver or spleen enlargement, or definite joint pains. There was, however, a history of so-called "growing pains." In this case all laboratory tests were negative, two undulant agglutination tests included. The father objected to further tests, so the case was never proved undulant, other than symptomatically and because of the sister; but cases later have shown where two, four and even five tests were necessary in several instances before a positive was obtained.

Another case, a boy of eight years, had been diagnosed pulmonary tuberculosis because of a fever, cough and loss in weight. This diagnosis was made by a good reputable physician. The boy was taken to San Haven where repeated sputum tests failed to reveal the organism, and the X-ray was equally doubtful. Our examination showed a sinusitis, accounting for the sputum, and the Mantoux test was negative, 1 to 1,000 and 1 to 100. The cause of the fever, 99° to 100.5°, because of the night sweats, anemia, and odor of the feet, was tentatively given as undulant, but it required four separate agglutination tests over a period of one year before a definite positive was obtained.

A girl, age ten years, had been highly nervous, failing in school, not eating, face and extremities

very definitely choreiform, for over a year. It was also known that she ran a low grade fever, fluctuating daily. She tired very easily and could not sleep well. A physical examination revealed a definite sinusitis, a congested pharynx, and a tender, resistant, right lower abdomen. A diagnosis of chronic appendicitis, chronic sinusitis, and chronic chorea was made. Here again, the undulant test proved positive and explained the low white count with the above findings.

One of the members of our group has a child who has been subject to spells of acidosis and vomiting for several years. These have always been accompanied by fever. In the routine search for causes of unexplained fever in children, we not only got a very definite, positive, undulant agglutination report, but, more recently, have had a very positive skin test reaction.

These cases outlined briefly represent only four of the forty in our series among children, varying in age from two and one-half to fifteen years. Twenty more have been diagnosed in adults by our group. They are about equally divided between both sexes. Eight of the cases come from four families. In one family, a case diagnosed endocarditis and possible tuberculosis in the mother, was later proved to be an undulant fever after the condition had been proved in two of her children. Of these forty cases, only nine had any traceable chance of exposure other than through raw milk. All of these cases have had complete laboratory work to rule out other infection.

Undoubtedly, much of our neglect of the subject has been because we have not recognized the lack of any clinical picture. We are accustomed to diagnose conditions with fairly limiting symptomatology, but here we have a condition that may simulate any different groups of symptoms that might be caused by a low grade systemic infection, giving a picture varying from only a low grade daily fever, such as we expect in incipient tuberculosis, to such a complex picture that we had best refer to lantern slides showing how the findings in the series were distributed.

FINDINGS - IN ORDER OF FREQUENCY

No.	Findings	No. of Cases	Subdivisions	No. of Each
1	Nervousness	28	Irritability	26
			Restlessness at night.....	20
			Emotional Instability	9
			Choreiform	2
2	Head Colds	26	Sinusitis .....X-rayed Pos.	20
			Nasopharyngitis	6
3	Fever	26	Cont. low with flares.....	12
			Intermittent "Bats"	14
4	Diseased T. and A.....	22	Chronically inflamed	14
			Hypertrophied	8
5	Malnutrition	18	Underweight	11
6	Anorexia	16		
7	Rheumatic	15	Arthritis	6
			"Growing Pains"	11
8	Exhaustion	14		
9	Abdominal Pain	13	Cramps—Generalized	3
			Rt. Abdomen—Localized	10
10	Sweats	12	Head and Body	12
			Feet	2
11	Headaches	9	Variable .....	...
12	Cardiac	8	Mitral Regurg.	6
			Myocardial	2
			Cyclic	2
13	Emesis	5	Irregular	3
14	Pyuria	5	Pyelitis	2
15	Halitosis	4		
16	Epistaxis	3		
17	Large liver	3		
18	Large spleen	2		
19	Stomatitis	2		

FINDINGS

There has been no attempt to list the symptoms and findings separately, or to designate in the outline whether due to or coincidental with the abortus infection. Undoubtedly the first, nervousness, is a condition most surely aggravated by the systemic infection. Here we have the irritable child, the child that cannot relax at night, the emotionally unstable, or the more evident choreiform type of patient. The latter type is so typically chorea that the majority will more truly consider the undulant infection as a happenstance. But, I believe that this infection is capable of hitting the nervous system so directly as to cause a typical chorea, commonly thought to be a specific disease.

"Head Colds," for the most part, twenty out of twenty-six cases, definite sinusitis as proved by X-ray, always occurred with what appeared to be the "flares" of undulant fever. The question

here is, is the sinus infection present because of the child's lowered resistance due to the abortus infection, or is the sinus condition a further manifestation of the disease itself. Probably it is a coincidental condition, but it occurs with such frequency as rightfully to deserve further consideration.

Fever is a common finding, with twenty-six cases giving it as a complaint. This, however, only shows those in whom it has been observed. All have been shown to have periods of fever, even though so slight as to go unnoticed without a thermometer check up. Others, particularly one case, had the sole and only complaint of "bats" of fever. The intervals without fever may run several months at a time. Again, one case ran some fever almost every day for two years. The higher the fever during the flares, apparently the longer the interval between attacks.

Diseased tonsils and adenoids may again appear to have no direct association with the disease.

I believe that here we may have a focus of this infection as well as with any other type of infection, and three of our more pronounced cases have cleared following operation. One member of our group emphasized the point that this showed the fever had been caused by the diseased tonsils, and not by the undulant. The majority will probably hold this view. But in the present reaction to the cases on hand, I am very much inclined to the opinion that our abortus organism selects tissues, causing effects that are remedied by our customary procedures as often as we should secure a result in rheumatic fever, chorea, etc.

Malnutrition does not necessarily imply marked underweight. This was so in eleven of the eighteen cases in which malnutrition was noted. The other eight were within the fifteen per cent of the average weight. Anomalies, poor hygiene or overfeeding did not enter into these cases. Infection was the only apparent reason for the condition existing, although underfeeding, due to a lack of desire to eat, did require attention in sixteen cases.

Rheumatic symptoms were largely growing pains. Of the total, fifteen, there were eleven giving this as present or past history, having caused sufficient complaint to bring it to the parents' attention. Six of the cases presented true arthritis with no special selection of joints.

Exhaustion, parents stated, was very evident in fourteen cases. The complaint most commonly given was that the child tired so easily.

Abdominal pain frequently simulated appendicitis, but on more careful study was shown to be intercostal neuralgia.

Sweats, particularly night type, so feared by parents as exemplifying tuberculosis, were mentioned in twelve histories. Only two of these had the odor of the feet, so often given as one of the frequent findings.

Headaches varied as to location and severity, but the nine cases were more of the neuralgic type of pain.

The heart conditions cleared with rest, four requiring one to three months in bed to gain the desired improvement.

Vomiting might be characterized as cyclic in two of the cases. Three others would come more

exactly under the acidosis syndrome.

Pyuria existed in five of the cases, all females. Two of this number were true pyelitis. It would be well to consider undulant infection as a likely cause of such a condition where no other evident cause exists.

Four children had offensive breath, though bowels, diet, and general condition of nose and throat did not contribute noticeably.

Epistaxis without apparent ulceration caused constant worry in three cases.

It was particularly interesting to find the liver and spleen enlarged in so few cases, as so much has been written of this in literature as a classical finding.

Stomatitis was associated with two of the cases complaining of halitosis. Attempts were made to clear the condition by intestinal purging and attempting to change the intestinal flora.

TESTS

Our experience with the State Laboratories and another in an adjoining state was not satisfactory in verifying these clinical undulants. Casper I. Nelson, Professor of Bacteriology at the State Agricultural College, has personally run these agglutination tests since early in our search, when we found his reports returned positive while our State Laboratory and the Minnesota State Laboratory would send us negative results. Quoting a letter received from the latter, "if the blood submitted was drawn before the fourteenth day of the illness, it would be well to submit a later specimen, since the formation of undulant fever and tularemia agglutinins may be delayed until about the fourteenth day of the illness." This statement is given merely to emphasize the misconception of undulant fever. We are firmly convinced that several of our cases have had the disease three to four years before we have submitted the blood, and even during or following acute flares, we may or may not receive a positive agglutination test. Why we have obtained a positive result at one time and not another, on repeated tests at intervals on the same case, seems to bear no relation whatsoever to the time interval before, during or after a flare. As to the date of onset, I believe that is something no one can say accurately. (Lab. Slides.)

Case No.	Hb.	W. B. C.	Trials	Lab.	Strain	Agglutination Tests					Ck
						1/20	1/40	1/80	1/160	1/320	
4861	70	8100	2	City	N. D. Mich.	Parents forbid more					
12628	70	5650	1	A. C.	N. D. Mich.	+	+	0	0	0	0
7678	55	11550	1	City	N. D. Mich.	Reported questionable or negative.					
406	60	6600	2	State City	N. D. Mich.	Complete agglutination 1/80					
849	65	6700	2	City	N. D. Mich.	Complete agglutination					
13151	68	7100	4	A. C.	N. D. Mich.	Agglutination 1/60 to 1/160					
8896	....	.....	1	A. C.	N. D. Mich.	0	++	+++	+++	+	0
4326	50	6700	1	A. C.	N. D. Mich.	+++	++++	++	++	0	0
4510	70	9250	1	A. C.	N. D. Mich.	0	+	+++	++	++	0
4170	80	10500	1	A. C.	N. D. Mich.	+++	++	+++	++	++	0
14298	75	7700	1	A. C.	N. D. Mich.	+++	++	++	++	++	0
15341	75	7400	1	A. C.	N. D. Mich.	+	+	+	+	+	0
15422	55	22750	2	A. C.	N. D. Mich.	+	+	+	+	+	0
15475	75	12500	1	A. C.	N. D. Mich.	+	+	+	+	+	0
15677	80	7000	1	A. C.	N. D. Mich.	+	+	+	+	+	0
15638	65	8650	1	A. C.	N. D. Mich.	Phone report positive Data lost					
8088	73	9650	1	A. C.	N. D. Mich.	+++	+++	+++	+	tr	0
14145	73	9800	1	A. C.	N. D. Mich.	+++	+++	+++	+	0	0
15674	75	9750	2	A. C.	N. D. Mich.	+++	++	+	+	+	0
16069	78	8100	1	A. C.	N. D. Mich.	+++	+++	+++	+	0	0
14877	75	9850	1	A. C.	N. D. Mich.	+++	+++	+++	+	+	0
8911	75	8950	1	A. C.	N. D. Mich.	+	+	+	+	0	0
12103	83	7800	2	A. C.	N. D. Mich.	0	0	0	+	+	0
16084	60	16000	1	A. C.	N. D. Mich.	+++	+++	+++	+	+	0
15065	65	13100	2	A. C.	N. D. Mich.	+++	+++	+++	+	+	0
15873	68	12500	1	A. C.	N. D. Mich.	+++	+++	+++	+	+	0
				A. C.	Mixt.	+++	+++	+++	+	+	0
4611	80	7750	2	A. C.	N. D.	++	+++	+++	+	0	0
10671	58	9950	1	A. C.	N. D. Mich.	+++	+++	+++	+	+	0

						1/20	1/40	1/80	1/160	1/320	Ck
15916	60	7100	1	A. C.	N. D.	+++	++++	++	0	0	0
					Mich.	+++	++++	0	0	0	0
10643	68	9700	5	A. C.	N. D.	++	++	++	++	0	0
					Mich.	+++	++	+	0	0	0
15464	70	7600	1	A. C.	N. D.	+	+	0	0	0	0
					Mich.	++	++	+	0	0	0
15392	72	7800	1	A. C.	N. D.	+	+	+	+	0	0
					Mich.	+	?	0	0	0	0
9819	70	12000	1	A. C.	N. D.	+	+	+	+	0	0
					Mich.	+	+	+	+	0	0
15069	....	12300	1	A. C.	N. D.	+	+	+	0	0	0
					N. D.	+	+++	++	+	+	0
15341	76	9500	1	A. C.	Mich.	++	+++	+++	+	+	0
					N. D.	+	+	+	0	0	0
15300	70	9900	1	A. C.	Mich.	+	+	?	0	0	0
					N. D.	+	++	++	+	tr	0
7434	73	9450	1	A. C.	Mich.	+	+	+	0	0	0
Skin test positive					N. D.	0	0	0	0	0	0
15176	75	8100	1	A. C.	Mich.	?	?	?	0	0	0

Referring to slides on the agglutination results, you will note we have also included the hemoglobin and the leukocyte count of each case. One is led to believe that the sinus infection so prevalent in these cases may have influenced the count, as the anticipated leucopenia is missing for the most part. The hemoglobins run generally low. The next column notes the trials necessary to secure the agglutination tests as recorded. One trial has usually been sufficient, but you will check many twos, one four and one five. The laboratory giving the reports is listed next. The two strains used were the so-called North Dakota and the Michigan strains. No porcine type was used, making it likely that we have missed an occasional case. The final column of the agglutination results begins with a case not proven positive after two trials. But this case is a very

characteristic one, and a sister of a proven case. Further trials would undoubtedly have given a positive as the patient was subjected to same exposures. Referring hurriedly to the others, you will see how variable the results are. And to definitely impress the fact that no special amount of agglutination needs necessarily be reported to mean a positive, the last case gave a very positive skin test with only a questionable agglutination.

Dr. K. F. Meyer of the Hooper Foundation, University of California, kindly furnished the material for the intradermal tests. Because our work has been in private practice, and not ward cases, it has been difficult to so far check many of our cases. The fourteen reported show the necessity of running both tests to secure the greatest accuracy.

COMPARISON

Case No.	INTRADERMAL		AGGLUTINATION		Comment
	.1 c.c. Abortus	.1 c.c. Control	N. D.	A. C. Method	
15422	Pos.	Neg.	Pos.		
4326	Neg.	Neg.	Pos.		
3041	Neg.	Neg.	Neg.		Mantoux Pos.
11550	Neg.	Neg.	Neg.		2 sisters Pos.
6369	Pos.	Neg.	Questionable		
1810	Pos.	Neg.	Neg.		
4611	Pos.	Neg.	Pos.		
13151	Pos.	Neg.	Pos.		
7482	Pos.	Neg.	Neg.		
15075	Pos.	Neg.	Pos.		
12136	Pos.	Neg.	Neg.		
1189	Neg.	Neg.	Pos.		
15176	Pos.	Neg.	Neg.		
10671	Neg.	Neg.	Pos.		

TREATMENT

We have tried unsuccessfully the undulant fever vaccines, acriflavine, and convalescent serum. The latter idea, however, seemed absurd

in that our series indicated the period of convalescence to be very indefinite.

Three cases, as stated, cleared clinically following tonsillectomy. Several others showed no

change. Perhaps the question of focus should be considered.

Keeping up the patient's general condition is vital in limiting the effects of the disease to a minimum.

Prophylaxis is at present our only satisfactory means of combating this widespread infection. Raw milk unquestionably was the source of infection in eighty-five per cent of our series, as no other contact is evident. Our economic condition will not permit the drastic measures taken with tubercular animals, but we can secure and enforce laws requiring pasteurization of all dairy products, and this is our duty as members of the medical profession.

CONCLUSIONS

1. Undulant fever is a very prevalent infection in North Dakota.

2. Children are as susceptible to the infection as adults.

3. Raw milk is the most common carrier among children.

4. The clinical picture is any that can be caused by a low grade systemic infection.

5. Unexplained fever should indicate a search for undulant fever.

6. Both the agglutination test and the intradermal test should be used in the search, but the clinical impression, after excluding other causes, should be used in interpreting the results obtained.

7. There is no cure at present for undulant fever. It presents a real problem. Prevention by pasteurizing all dairy products is essential in protecting the health of our children.

COMBINED ORCHOTOMY AND EPIDIDIMOTOMY

By J. E. ENGSTAD, M.D.

GRAND FORKS, NORTH DAKOTA

In acute and subacute cases of orchitis, surgical interference has been in our hands the most promising of all the methods devised for treatment of this intensely painful and destructive inflammation, be it due either to tuberculosis, Neisser infection, trauma or mumps. It is our opinion that no surgical procedure is followed by such gratifying results as this minor operation, for it will almost universally conserve the function of the organ if resorted to at the first signs of the infective process. In our series of cases we have not been disappointed in a single instance where the operative procedure was instituted before the destructive degeneration due to edematous pressure of the organ, which inevitably follows any infection. Especially gratifying is this procedure in orchitis due to mumps, as it will conserve the structure and function of the gland. The gland being covered by two partially inelastic membranes, the tunica vaginalis and the tunica albuginea, is in the initiatory stage of infection or hyperemia subject to a severe tension, due to exudation of fluid into both the structure and the serous membrane; this produces pressure which will within a short time compress and agglutinate the lumen of the arteries, whereby the blood circulation will be permanently impaired, which will inevitably cause atrophy and loss of function.

In tuberculosis and other infections the process is not so rapid. Here the exudate will be reabsorbed to form new connective tissue, and if this process continues for an indefinite length of time, the tunics will gradually expand; the structures of the glands will gradually undergo degenerative process with permanent injury to the organ.

The simplicity of the operation ought to commend itself not only to the surgeon but to the occasional operator. It consists of an incision one inch in length through the skin, connective tissue, and both tunics, to the testicle proper. If the lesion is acute, from a few drops to ten cc. of fluid is often expelled under pressure. The epididymis is repeatedly punctured with a sharp surgeon's needle if the organ shows evidence of infection. A few strands of catgut, or a drainage wick, are introduced after the fluid has been drained off. The wound in the tunics is closed, leaving space for drainage. The incision in the scrotum is also closed, and a small pad applied for dressing and a suspensory bandage fitted. On the third or fourth day the drainage wick is removed. Most of the patients will be up and around on the second or third day. Pain and tenderness disappears and a complete recovery can be confidently expected except where the

tubercular process has gone on to destructive degeneration or caseation.

About thirty-five of my cases were Neisser, half a score diagnosed as tubercular, and five as numps. The latter are most recent cases. In

this small series of cases the patients were up and around the second or third day. The temperature was normal, all pain and tenderness had disappeared, and what is of greatest importance, no evidence of atrophy has been observed.

MULTIPLE CYSTINE CALCULI IN THE LEFT KIDNEY WITH OBSTRUCTION AT THE URETEROPELVIC JUNCTURE AND MULTIPLE CYSTINE CALCULI IN THE BLADDER IN A BOY OF FOUR YEARS.*

By GILBERT J. THOMAS, M.D., F.A.C.S.

and

F. C. RODDA, M.D.

MINNEAPOLIS, MINNESOTA

During recent years medical literature has contained numerous articles concerning urologic conditions in children. A review of these indicates that urinary lithiasis is frequently observed. In a paper¹ which appeared in *Minnesota Medicine* in 1922, one of us, after reviewing the literature and obtaining data from urologists and pediatricists, reported 208 infants or children under ten years of age with urinary lithiasis. Diet and infection were recognized as possible factors in the production of these calculi. Recent improvements in the child's size cystoscope which permits bilateral ureteral catheterization and urography have made possible the diagnosis of many congenital anomalies in the infant urinary tract. By interfering with drainage, these have undoubtedly contributed to the formation of urinary calculi.

Dr. H. O. Mertz², in a paper published in 1928, called attention to the frequency of congenital conditions in the urinary organs and their influence upon the occurrence and the treatment of pyuria in infancy and childhood.

In the *Journal of Urology* of November, 1925, Thomas³ reported a child with bilateral renal lithiasis who had a congenital anomaly at the ureteropelvic juncture. In 1929, the same writer⁴ reported a girl seven years of age who had congenitally deformed ureters. An unsuspected stone which had not produced pain was found in the right lower ureter.

In our experience, calculi in the ureters of children are not frequent, and they occur rarely in the bladder. Rodda, who has conducted a pediatric practice for many years, has not observed a single child with stones in the bladder. However, the data we obtained from the literature

indicate that fifty-seven per cent of children under fifteen years of age with urinary lithiasis had calculi in the bladder. (Many of these reports are old and are from foreign literature.) Most stones in the infant urinary bladder reported in the literature were associated either with bladder diverticuli, congenital atony, or with congenital obstruction at the bladder outlet. Few of these reports contain a history of ureteral or renal pain, so that it is unusual to find stones en route to the bladder through the ureter.

The case we are reporting herewith is of unusual interest. A large number of pure cystine stones were found in the kidney and bladder. In addition, this child had an obstruction at the ureteropelvic juncture with an anomalous vessel crossing the ureter which may have interfered with drainage, thus predisposing to the formation of these calculi.

The patient was a boy four years whose history and physical findings were as follows: He was referred by Dr. Thomas Flynn, of Redwood Falls, Minnesota, with a tentative diagnosis of stone in the bladder. The boy's presenting complaints were frequent, scanty, bloody urination with severe pain. At hourly intervals the child would assume the knee-chest position, clutch at his penis, perspire freely and with severe straining and loud crying finally succeed in passing a few drops of bloody urine. He had had but little sleep for several days and there was almost complete anorexia.

Up to the age of seventeen months his history was that of a normal infant. At that time, accompanying an attack of influenza, he passed bloody urine for a few days. At about three years of age the urine again showed blood on several occasions, but there was no complaint of pain. Two months before we observed the boy,

*Presented at the Forty-second Annual Meeting of the American Association of Genito-Urinary Surgeons at French Lick, Indiana, May 22, 23 and 24, 1930.

he had a grippal infection. This was repeated two weeks before we saw him, and was followed by an abrupt onset of the symptoms mentioned above. There was no history of injury, systemic disease, such as typhoid, or chronic pyuria.

On physical examination the child showed emaciation and great prostration. There was a daily temperature elevation to 101.5° . The tonsils were enlarged and injected, and there was moderate cervical adenitis. A left otitis media progressed to a rupture of the drum, with discharge of pus. The von Pirquet test was negative. The urine was scanty and contained a large amount of blood and pus.

Most pediatricists who have collaborated with urologists have recognized the ease with which complete urologic examinations may be made with children. The X-ray and the cystoscope may be used in every instance where urinary disease is suspected.

The X-ray in this instance revealed one large and numerous small shadows over the left renal area. Over the bladder we were much surprised to find a nest of faint shadows ranging in size



Fig. I. Roentgenogram showing one large and many small shadows in the left kidney area, and multiple shadows in bladder area.

from a green olive pit to an almond. The shadows over the bladder area, because of their size and indistinctness, were at first interpreted as feces in the bowel. A second X-ray revealed the same shadows over the bladder area, but in a slightly

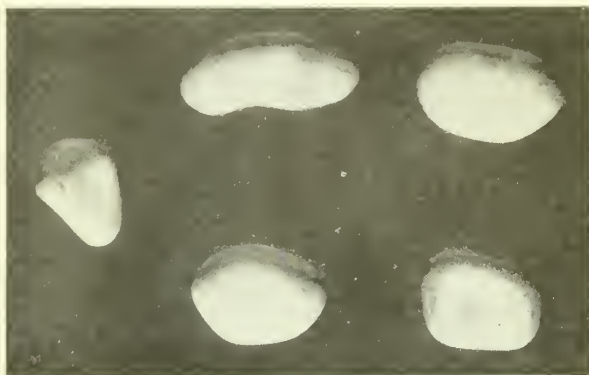


Fig. II. Cystine stones removed from bladder.

altered position, so that a tentative diagnosis of multiple bladder calculi was made.

Cystoscopy was done to orient and interpret the shadows found in the original film, and to determine the relative function of the right kidney. The meatus of the urethra had to be dilated somewhat, but after this was accomplished, the cystoscope passed easily into the bladder. No bladder neck obstruction was found. Five stones were resting on the trigone of the bladder. These had many smooth facets, and were grayish in color with a slightly yellowish tint. No diverticulum of the bladder could be found, but cystitis, graded 3, was present throughout the mucosa. The ureteral orifices were gaping, as is usual in children, and cloudy urine was expelled from the left one. The urine from the right ureteral orifice appeared clear. Number 5 French whistletip catheters passed through both ureters without meeting obstruction. Very cloudy urine was obtained from the left side and indigocarmine returned after eight minutes and concentrated very slowly. The urine obtained from the right kidney was clear and indigocarmine was returned in three minutes and concentrated rapidly.

It was evident from the urologic and X-ray examinations that there were multiple calculi in the bladder, severe cystitis, one large and many small stones with pyonephrosis in the left kidney which had greatly diminished function.

In our experience congenital conditions in the urological and genital tract in children, as well as in adults, are frequently bilateral. Therefore, we considered it necessary to make a pyelogram of the right kidney, which eliminated this possibility.

The boy was very miserable from his distressing bladder symptoms and urinary infection, so that a suprapubic cystotomy was done immedi-

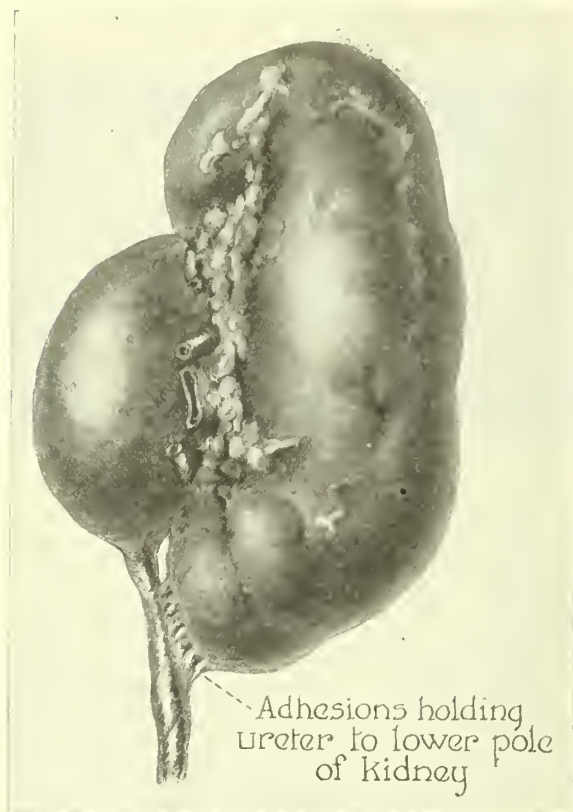


Fig. III. Unopened kidney showing adhesion of ureter to lower pole and large distended pelvis.

ately following the cystoscopy. The bladder stones were removed and a permanent suprapubic drainage was made. The child's postoperative convalescence was rapid.

The sixteenth day following the cystotomy, at which time the suprapubic wound was practically dry, we decided to do the nephrectomy. The kidney was delivered easily, although the upper pole was somewhat adherent. The pelvis and ureteropelvic juncture were much distended down to the lower pole of the kidney, where adhesions bound the ureter and held it very near the lower pole. During our first survey of the kidney and ureter we did not observe an anomalous blood vessel crossing the ureter. When the adhesions holding the ureter to the lower pole of the kidney were loosened, the ureteral wall at this point was found to be thick, and contained much scar tissue. The ureter was cut and tied in the usual manner a few inches below the obstructed area. In this area the ureter was not dilated, and looked and felt normal.

The pedicle of the kidney was easily found. It was grasped with a pedicle clamp and the kidney cut away. The pedicle was then ligated in the usual manner with two strands of chromic gut. When the pedicle clamp was removed we were much surprised and much alarmed to observe very brisk bleeding, evidently arterial. The pedicle stump, which had been grasped with a Carmalt forceps following the removal of the pedicle clamp, was carefully inspected. The ligatures seemed to be in good position and completely tied. We could not see a bleeding point or area in the pedicle stump. The hemorrhage could be controlled by packing, but when this was removed, the hemorrhage recurred, and was as brisk as before. Eventually a small blood vessel was seen crossing to the area formerly occupied by the lower pole of the kidney. This was grasped with forceps, tied and the bleeding stopped.

In spite of the fact that we carefully examined the ureter at the obstructed portion, we did not observe an anomalous vessel when the dissection was made. When the gross specimen was studied, however, a small artery leading to the lowermost portion of the pelvis and the lower pole of the kidney was found. We believe that this vessel caused the bleeding, and it may have been anomalous.

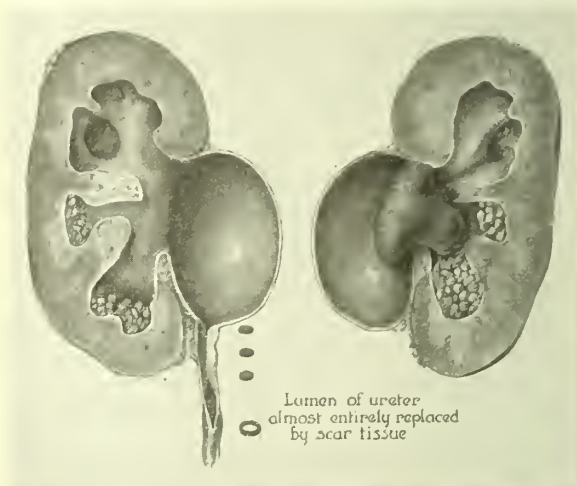


Fig. IV. Kidney and pelves bisected showing the multiple stones with large hydronephrosis and obstruction to the ureter.

The patient made an uneventful recovery following the nephrectomy, and returned home in twenty-one days. An X-ray examination of the kidney, ureters and bladder was made before the patient left the hospital, but revealed no evidence of shadows that might be interpreted as calculi remaining in the urinary tract. Two months later he

was reported to be active, comfortable, and thriving.

A chemical analysis of the removed calculi is described as follows by Dr. R. H. Rufe, of the Department of Physiological Chemistry of the University of Minnesota: "The physical characteristics of these calculi were different from those



Fig. V. Roentgenogram of kidney and bladder area following operation. No stone shadows.

usually described for cystine calculi, except, perhaps, for the presence of numerous smaller stones. The calculi were hard, but brittle, and easily ground to a fine white powder. When one of the large bladder stones was sawed through the structure could be discerned as concentric layers of a white, amorphous appearing substance with a rather large nucleus of a pale yellow, crystalline material, similar to the very large renal pelvis stone.

Preliminary tests for uric acid, calcium and phosphorus were negative. The powdered calculi burned with a small, pale, blue flame with practically no residue, but with a peculiar, sharp odor.

An ammoniacal solution of the powder showed on evaporation myriads of six sided, flat crystals characteristic of cystine. The cyanide nitroprusside reaction, as described by Brand, Harris, and Biloon, was strongly positive.

Analysis of the outer shells of the bladder calculi, their nuclei, and the large stone from the pelvis of the kidney was made for cystine and for total sulphur. The smallest stones were not analyzed quantitatively, but they gave strong qualitative tests for cystine. The modification of the Sullivan reaction, as described by Brand, Harris, and Biloon was used for the cystine determinations. All three samples gave over 100 per cent cystine. A sulphur analysis of the cystine used in the preparation of the standards showed a maximum content of 92 per cent cystine, using the factor 3.75 in converting g. sulphur to g. cystine, so the calculi had a higher content of cystine than the standard. Total sulphur was determined, using Benedict's sulphur reagent to oxidize the sulphur, and the benzidine method in determining the sulphate formed. Drying the powder obtained from grinding the calculi at 100° for three hours caused less than 0.5 per cent loss in weight."

Our study of this patient's history, together with the urinary and operative findings and the data obtained from examinations of many other children with urologic conditions, emphasizes the following:

1. Urologic examinations may be made just as easily and as completely with children as with adults.
2. Urinary calculi occur frequently in children.
3. Congenital changes in the urinary tract by interfering with drainage may be a factor in the production of infection and urinary stones in children.
4. Pure cystine stones may occur in the urinary tract of children and may cast a very distinct Roentgen ray shadow.

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PRIMARY CARCINOMA OF THE LUNGS WITH CASE REPORT*

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Through the past quarter of a century, primary carcinoma of the lungs has ascended to a position of importance in the differential diagnosis of lung diseases. In this respect Weller has stated that no other form of malignant disease is more intriguing than primary lung carcinoma, for within a generation it has become one of the common forms of neoplastic disease, instead of the rarity it was considered at the beginning of the present century. Such a rapid rise to prominence has opened wide vistas of speculation concerning the reality of the increase, the etiology of the affliction, and the therapeutic or prophylactic fight against it.

Historically it is known that literature relative to the cancer of the Schneeberg miners dates back to 1500 A. D. In these early reports, and, in fact, until comparatively recently, the carcinoma of these miners was not known as such. For this reason Morgagni's case, published about 1761, is generally conceded to be the first true case of primary lung carcinoma. Bayle, in 1810, is credited with the second authentic case report. This case was described as "phthisie cancreuse," which term aroused the disputations of Laennec from whose pen came the first distinctive descriptions of "encephaloid" lung tumors. This term was used promiscuously for all tumors until Virchow worked out a rational classification. During the middle of the last century, the names of Stokes, Kohler, and Graves became identified with the subject. Reinhardt, in 1878, collected 29 cases; Passler, in 1896, found 70; Sehrt reported 178 in 1904, and Adler, in 1912, produced the first comprehensive monographic report of 374 cases.

Thus the historical facts intimate a gradual increase in the number of cases observed. Statistics indicating an absolute increase, as based on the total number of necropsies, are available in this country, England, and Germany. In America, Barron's cases from the University of Minnesota show 13 cases of carcinoma of the lung in 4,326 autopsies, or an incidence of .29 per cent. However, from 1899 to 1911, not a case was found in 1,333 postmortem examina-

tions, while in two and one-half years, from 1919 to 1921, nine cases were observed in 1,006 necropsies. Thus the incidence increased from zero in 1911 to .9 per cent in 1921. Symmers, at Bellevue Hospital reports three cases in 5,000 autopsies up to the year 1917, and 29 cases in 6,000 necropsies from 1919 to 1925. The work of Rusk and Randolph at the University of California, and that of Fried and Moise in the East, substantiate the increase in America.

In England, Rolleston and Trevor found only eight cases of intrathoracic neoplasms in 3,983 necropsies in 1903. Duguid, in a study of pulmonary new growths in Manchester, demonstrated only five cases in 2,107 autopsies from the year 1871 to 1885, a percentage of 0.24, while in the four years from 1921 to 1925, 29 cases were listed in 1,126 necropsies, a percentage of 2.57. Simpson, in the London Hospital postmortem statistics, showed an incidence increase from 0.51 per cent in 1907 to 2.05 per cent in 1925.

European, and especially German statistics, are more impressive. In Basel, Staehelin found an increase from 1.76 per cent of all carcinomata in 1906, to five per cent from 1912 to 1924. Necropsy reports from Vienna show an increase from 0.54 per cent in 1895, to 10.3 per cent in 1924. In Jena, Berblinger reported an increase from 2.2 per cent in the year 1910 to 1914, to 8.3 per cent from 1920 to 1924. Leipsig material, during the same period, showed an increase over ten per cent, reaching no less than 15.5 per cent of all carcinomata found in 1924. Kikuth states that in Hamburg, carcinoma of the lungs ranks second among visceral neoplasms and is one-third as common as cancer of the stomach. These figures are all based on the total number of necropsies, and hence are quite convincing that the increase is real and not only apparent.

From the viewpoint of either age or sex, incidence is an interesting feature. Adler found 269 male and 93 female cases. Breckwoldt summarized 16 series and found 807 males and 280 females affected. Including these two series, 2,210 cases have been analyzed showing 1,670 males and 540 females, a ratio slightly greater than three to one. Working on age incidence, Weller assembled 1,100 cases and found that the four years

*Presented by invitation before the Lymanhurst Medical Staff on April 28, 1931.

of greatest age frequency were 58 to 62. Not all authors have listed the ages by the decade, but in 1,346 cases so classified, 330 cases were found between the ages 40 and 49, 425 from 50 to 59, and 293 from 60 to 69. The patient whose case history forms the basis of this report was 19 years of age, and, through an analysis of 1,850 cases, only 11 were found to be of that age or younger. The range of ages is from five to eighty-six years.

As a result of the marked increased incidence, the etiology of lung carcinoma has been the subject of much discussion. Staehelin states that only one definite cause of carcinoma of the lungs is established, that of the Schneeberg mine cancer. Dust of the Saxony mines is known to contain arsenic, cobalt, bismuth, nickel, fungi, and radioactivity. Berblinger has pointed out that by improving the general hygiene of the Schneeberg miners, carcinoma of the lung decreased.

Ewing claims that tuberculosis is the primary cause of lung cancer. Cherry, in 1925, stated that carcinoma attacks in later life those who have overcome the invasion of the tubercle bacilli in earlier life. He points out the fact that the sum of the combined mortality rates for carcinoma and tuberculosis has varied little in 30 years, for, while the percentage of deaths from carcinoma increases, the percentage of deaths from tuberculosis decreases. It is his belief that acquired resistance to tuberculosis is the predisposing cause of carcinoma, or that cells react in a different way to the same stimulus, the tubercle bacillus. However, support for the belief that tuberculosis is the primary etiologic factor is lacking. Of 374 cases reported by Adler, 19 had tuberculosis. Ferencsy and Matolcsy found only 44 cases of pulmonary tuberculosis among 282 cases of lung carcinoma. Seyfarth could demonstrate only 15 tuberculous lesions in 307 cases of lung cancer. In only six of these 15 cases were the tuberculous foci near the neoplastic areas, and, in only two did the carcinoma seem to develop out of the tuberculous cavity. He concludes that tuberculosis can be discarded as a factor in the etiology of carcinoma of the lungs.

Influenza has, perhaps, received most attention as a cause of primary lung cancer. This is due to the fact that statistics compiled by Berblinger, Barron, and others, indicate a marked rise in the number of cases immediately following the influenza epidemic. Askanazy, Winternitz, Goldzieher, and others have emphasized the fact that the pathological lung changes following influenza resemble precancerous epithelial proliferation. Staehelin, however, states that the

increased incidence noted by Berblinger occurred as early as 1912, and that of Berblinger's seventeen cases occurring after the influenza epidemic, only four gave a history of influenza. Of 139 cases reported by Simpson only five gave a previous history of influenza. Gottstein, working under Verse, could find no relationship between preceding influenza and lung carcinoma.

Inhalation of tar particles is urgently stressed by many as the chief causative factor. Möller painted tar on the back of rats and produced lung cancer. Kimura produced carcinoma of the lungs through insufflation of tar through a tracheotomy tube in guinea pigs. Goltz and Simpson both remark that in the United States and Germany where road tarring is common, carcinoma of the lungs is increasing in frequency, while in Hong Kong and Singapore, where no tar is used on the roads, the disease is a rarity. On the other hand, Konrad and Franke state that the increase in Riga is not due to the increased number of automobiles or tarring of roads, for there is no such increase in either of these factors. Vincent conducted a survey in France to determine any relationship between street tarring and carcinoma, and, in his report, stated that no relationship could be traced.

Imperfect combustion of automobile gases, and cigaret smoking with its increased inhalation of irritant smoke, have received consideration. Exposure to war gases is a factor noted by some observers, yet none of the cases cited give a history of such exposure. Hampeln points out the greater incidence and greater quantities of dust in cities. Trauma is advocated by a few investigators as a cause. Radiation of the chest with X-ray or radium, pneumoconiosis, other chronic lung diseases such as fibroid pneumonia, bronchiectasis, and chronic bronchitis have all been mentioned in studying the etiology of the disease.

At present it seems to be the consensus of opinion that no one factor is the sole cause. Chronic irritation, whether simple or complex, is essential, and under this general heading lung irritants are classified as: (1) chemical, (2) mechanical, (3) bacterial, and (4) radioactive.

Clinical features prove of greater significance when it is realized that the diagnosis is established more frequently at the necropsy table than in the ward. Of the 178 cases collected by Sehrt in 1904, only six were correctly diagnosed before death. Lubarsch found only 240 of 458 cases correctly diagnosed and of these 240, only 109 cases had the primary seat of the growth in the lung correctly placed. As a consequence of these

facts, it appears important to review the clinical features.

Either an abrupt or an insidious onset may usher in the disease, but the latter type occurs in two thirds of the cases. When, however, it is sudden, the symptoms usually are pain, dyspnea, hemorrhage, or the symptoms of a pleurisy, bronchitis or pneumonia. In the order of frequency the symptoms are cough, expectoration, pain, dyspnea, pyrexia, hemoptysis, emaciation, cyanosis, dilated veins, edema of the face, neck or arm, night sweats, dysphagia, vomiting, clinical secondary deposits or pressure symptoms, laryngeal paralysis, and clubbed fingers.

Cough is usually the first symptom, though it may be absent. At first it is usually dry and irritant while later it becomes continuous and is accompanied with mucoid or blood streaked sputum. Goltz has stated that a recurring cough with pain and dyspnea, accompanied by small amounts of clear or blood streaked mucus is suggestive of bronchial carcinoma, especially in the cancer age. If expectoration accompanies the cough, it is often scanty and of a mucoid nature in the early stages, but later it is profuse, foul in odor, mucopurulent or blood streaked. Brunn states that the typical "currant jelly" sputum of early reports is absent in later reports. Tubercle bacilli were present in the sputum of ten per cent of 626 cases, and consequently the presence of tubercle bacilli does not preclude the possibility of carcinoma.

Pain is often early and continuous, though it may be intermittent. It is described as being sharp, dull, aching, pleuritic or lancinating. It is always on the same side of the chest as the growth, but it may be referred to the neck, shoulder, abdomen, back, arms or legs. Only in rare cases does strapping relieve it, and almost always opiates are required. Bonner makes the statement that the occurrence of continuous and severe chest pain, in the absence of pleurisy, is almost pathognomonic of a neoplasm. Dyspnea is most frequently described as an early symptom. Lichty, Wright, and Baumgartner maintain that it is dependent upon pain, the extent of lung tissue involved, and pleural effusion.

Pyrexia is frequently seen early, but remains low until complications arise. It may be continuous or intermittent, and is generally attributed to coincident infection. In the later stages of the disease, it is often accompanied by a rapid pulse rate. Hemoptysis may be early or late, and varies from streaking to a frank hemorrhage, but fatal hemorrhage is very rare. One author states that hemoptysis is as indicative of lung cancer in the

adult, as it is indicative of tuberculosis in a younger individual.

Emaciation may appear early and gradually, but later is rapid and marked. Cyanosis is present in approximately one of five cases. Severe forms are usually found only late in the course of the disease. Dilated veins, edema of the face, neck and arms, night sweats, dysphagia, vomiting, pressure symptoms, laryngeal paralysis, and clubbing of the fingers are less frequent than the other symptoms.

Physical signs are often absent, and when present are not often constant or pathognomonic. Early signs are those of bronchial irritation, and later those of bronchial stenosis or obstruction. Physical findings in late stages of the disease depend, in the opinion of McCrae, Funk and Jackson, on the location and rate of growth of the tumor, on ulceration, obstruction with bronchiectasis, obstruction with atelectasis, pressure on intrathoracic structures, hemorrhage, effusion, infection, abscess, local and general metastases.

On inspection the patient looks sick, and seems in distress; breathing is labored and chest movement lags or is absent. Henrikson remarks that unilateral limitation of expansion is the most common sign. In far advanced cases superficial chest veins are found distended, the patient is cachectic, and there may be edema of the chest wall, neck, face or arms. Palpation reveals decreased tactile fremitus on the diseased side and normal or increased fremitus on the normal side. Decreased expansion is palpable, and the apex impulse is usually found displaced to the affected side. Davidson reports that tenderness is often found in the upper intercostal spaces.

Percussion notes and auscultatory signs change from day to day. The former are usually dull, and if bronchial obstruction is complete, the note is flat. Bonner considers a neoplasm likely when an extensive area of dullness is found accompanied with distant breathing. Staehelin has observed that a circumscribed area of dullness with decreased breath sounds and decreased voice transmission may allow almost certainty of diagnosis. These signs only appear when the tumor reaches a certain size. Breath sounds, as well as vocal fremitus, are usually decreased or absent, though just the opposite may be true. If the new growth has attained such size as to partially occlude a bronchus, rasping, prolonged expiration, as heard over the trachea, is audible by stethoscope. Simpson claims that often, in an early case, the only sign is the finding of diminished breath sounds at the base of the affected lung.

As an aid to diagnosis repeated sputum examinations should be made. The presence of tubercle bacilli does not rule out neoplasm. Tumor particles found in the sputum give an absolute diagnosis, but occur only in exceptional cases. Seyfarth and others have correctly diagnosed cases of lung carcinoma in this way.

Various opinions have been given concerning the value of pleuritic exudates in the diagnosis of pulmonary tumors. Staehelin states that one third of his cases sought medical aid as the result of a pleuritic exudate. Kikuth, in a high proportion of his cases, found pleurisy with effusion, which was of a hemorrhagic nature. De la Camp maintains that it is exceptional to find a bloody exudate, yet, when it is hemorrhagic, Staehelin contends that of the three most likely causes, tuberculosis, infarction or carcinoma, the last mentioned is the most likely. In support of this statement Goltz believes that a hemorrhagic pleural exudate indicates malignancy in practically all chronic cases not associated with trauma.

Improvement in the diagnosis of intrathoracic malignancy is due to the universal use of the X-ray, and to the bronchoscope. In the use of the former, the intratracheal injection of iodized oil may show an occluded bronchus, and thus point to a malignancy. Lichty, Wright, and Baumgartner state that in the early stages, before effusion is present, it is significant to see a shadow occupying the greater part of one lung, with light coming through the apex and the costo-phrenic angle. The typical X-ray, as described by several authors, shows in the less frequent lobar or lobular type a solitary round shadow in the lung field, but, in the more frequent bronchial type, it shows a unilateral, triangular, central shadow, apex pointing laterally, with strandlike processes infiltrating the lung tissue. In the opinion of Jackson, complete diagnosis without the bronchoscope is not possible unless the X-ray is positive. Brunn believes bronchoscopy is the most valuable adjuvant in diagnosis. One German authority is even more emphatic when he says that the bronchoscope is the only diagnostic help from which we can hope for improvement in diagnosis in the early stages.

In an effort to promote early and more accurate diagnosis, Staehelin advocates that carcinoma of the lung be kept in mind (1) when pleurisy will not heal, and especially when the exudate is hemorrhagic, (2) when gradual symptoms of bronchial or tracheal stenosis or a space limiting process in the thoracic cavity occurs, (3) when hemoptysis appears without other cause, (4) when chest pain is present without other

etiology, (5) when there is found an unexplained disease of the respiratory organs, especially in tuberculosis suspects when the tubercle bacillus can not be demonstrated.

Treatment can be summarized in four words: radium, X-ray, diathermy, and surgery. The three first mentioned measures are palliative. It is the general opinion that they may lead to amelioration of symptoms, but that they seldom prolong life. Surgery has its advocates for both endoscopic and transthoracic removal of the neoplasm. Most notable is the success of Sauerbruch, who, as the result of the surgical removal of the carcinoma in five different patients, reported one living three years and one five years after operation. Brunn reports one case living seven months after operation. Jackson gives encouraging reports from endoscopic excision.

The case observed is that of a white male, nineteen years of age. His past history was entirely negative. No history of cancer in any of his family or ancestors could be elicited. For two and a half years he had worked in the "sand blast" department of the Fisher Body Works at Detroit. His duties consisted of handling the metal body parts in a room where the temperature was maintained at a high level, and where a stream of fine sand was directed against the body in the finishing process.

His illness began July fifteenth, 1930, at which time he first noticed that he felt more tired than usual when work was done. His weight then was 180 pounds. On August fifth he felt sharp cutting pain in the lower portion of the right chest which compelled him to stop work. At that time a diagnosis of pleurisy was made. He returned to work in twenty-four hours, but work so aggravated the pain that he was unable to continue his employment. During the ensuing two weeks the pain gradually decreased, but he continued to lose weight and strength.

After his return to Minnesota during the last of August, it was noticed that he became pale, and at times seemed flushed and feverish. He coughed infrequently, and the cough was not productive until the middle of October, when, for several days, the sputum was blood streaked. His appetite was poor, and swallowing, in that it led to coughing, was difficult. He complained of difficulty in breathing and shortness of breath. Night sweats and palpitation occurred several times. When he was last weighed his weight had decreased to 135 pounds.

Physical examination revealed a pale, emaciated, adult, white male, with an anxious facial

expression. He was dyspneic and orthopneic and so weak that he had to be moved about in bed. On two occasions his temperature was 101.4 degrees and 99.6 degrees Fahrenheit. His pulse rate was 110, and, until the last two days, was of equal volume in both radial arteries. Two days before death he developed an edema of the right hand and the distal half of the right forearm.

Examination of the head, neck, and glands failed to reveal any pathology. Inspection of the chest showed the right side to be larger than the left and immobile throughout respiration. The right chest measured eighteen inches as compared with seventeen inches of the left side. Supra- and infra-clavicular fossae were both markedly retracted on the right side. The left side of the chest was less expansile than a normal chest. Palpation of the right chest demonstrated bulging and tender interspaces, and a uniform absence of tactile fremitus. Percussion of the right chest produced a flat note up to the second interspace anteriorly and the third spine posteriorly, while above these levels the note was hyperresonant. On auscultation, the right side of the chest revealed an absence of breath sounds below the second interspace and third spine, but above these points breathing was almost amphoric. Whispered and spoken voice transmission were accentuated in the upper portion, and were absent in the lower part of the right thorax.

In the left side of the chest what mobility was present was confined to the upper two thirds. No apex impulse was visible, and the apex was faintly palpable only in the fifth interspace two centimeters lateral to the nipple line. Tactile fremitus was decreased or absent in the lower chest and was increased in the upper half of the chest. Percussion gave a dull note in the lower left chest and hyperresonance in the upper portion. Breath sounds on auscultation were found to be decreased in the lower and increased in the upper portion of the chest. Few moderately coarse râles were heard laterally and posteriorly in the left base. Spoken voice was transmitted poorly in the lower chest and to an increased extent in the upper part. Maximum intensity of heart sounds was well beyond the nipple line.

Palpation of the abdomen found the liver border two or three centimeters below the costal margin, but the liver was not irregular or tender. Complete examination of the rest of the body failed to bring to light any abnormality except edema of the right hand and the distal half of the right forearm.

No tubercle bacilli could be found on repeated sputum examination. Urinalysis showed normal findings except for a one plus albumen. On

three different occasions the right side of the chest was aspirated, 750 cubic centimeters being obtained the first time, 500 the second, and 150 the third time. The first specimen was serous, the second and third both hemorrhagic. Both of the first two aspirations contained many polymorphonuclear leucocytes and small lymphocytes, but no bacteria could be found in direct smears and cultures remained sterile. The second and third aspirations showed red blood cells also. One guinea pig inoculated with pleural fluid died seventeen days later as the result of an intercurrent infection. The second guinea pig failed to reveal tuberculous lesions.

Postmortem examination was performed by Dr. H. E. Hilleboe, whose report is as follows: "No external evidence of pathology was evident except emaciation, enlargement of the left thorax, and edema of the right hand and forearm. In entering the thoracic cavity the ribs of the right side were easily cut with a scalpel, while those of the left side showed normal calcification. Massive adhesions were encountered involving the anterior pleura on the right side while the left side anteriorly was free from adhesions. The right pleural cavity was filled with 950 cubic centimeters of bloody, fibrinous exudate, and 250 cubic centimeters of the same fluid were removed from the left side. The heart was displaced a few centimeters to the left. Involving the right lower and middle lobes and the lower portion of the upper lobe was a friable reddish brown mass, which was adherent to the diaphragm and parietal pleura. This mass was inseparable from the mediastinum, and the lower half of the left lower lobe seemed to be a part of the same mass. The right middle lobe was less friable than the lower lobe, and the upper portion of the right upper lobe was atelectatic. Bronchial, tracheo-bronchial and mediastinal nodes were all embedded in the same mass. Hilum nodes were of reddish brown color and enlarged. On cross section the mass was gristly white, and pus could be expressed from numerous small cavities.

"On the left side an extension of the tumor was found in the lower portion of the lower lobe. Adhesions were found between the visceral and parietal pleuræ of the diaphragm and mediastinum. No adhesions involved the pericardium. The heart was normal in size and shape and the heart valves and musculature were normal. On gross examination, the diseased portion of the left lower lobe possessed the same characteristics as the mass on the right side.

"All other organs except the brain and spinal cord were examined and found normal, with the possible exception of the spleen, which, on section, showed a small white nodule two millimeters

in diameter."

Report of the microscopic examination of the lung, which was performed by Dr. E. T. Bell, is, in part, as follows: "Microscopic examination of the lung shows an adenocarcinoma. The carcinoma cells are arranged in narrow cords which anastomose, forming a wide network.

Remnants of the lung parenchyma are seen between the cords of tumor cells. This is probably primary in the lungs. Primary carcinomas of the lung do not have any microscopic features which are absolutely characteristic. The case is of interest since it occurs in a person 19 years old."

This is the tenth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

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THE DIAPHRAGMS

(Continued)

F. Subdiaphragmatic Abscess

These usually occur under the right diaphragm, which is much higher than normal, somewhat flattened, not sharply defined, immobile, and shows a definite pleurisy above it. The liver is displaced downward and rarely a gas bubble is seen under the high diaphragm.

G. Eventration or relaxtio diaphragmatica

1. *Transicut.* The left diaphragm may be displaced upward by a large accumulation of gas in the colon or stomach.

2. *Permauent.* The diaphragm shadow is seen high in the chest with the abdominal organs following it upward. It is not uncommon on the left where the stomach or colon can be seen either by filling with barium or by their gas content, well up in the chest. It is distinguished from hernia by the clear intact shadow of the diaphragm lying above the abdominal organs.

H. Hernia of the Diaphragm

The patient should always be examined in the prone and supine positions or many hernias will be overlooked as they tend to replace themselves in the upright position.

1. Paraesophageal hernia.

This is probably the most common type. The esophagus on filling with barium sulphate, shows tortuosity as it approaches the left diaphragm. Above the diaphragm just to the left of the spine there appears a large rounded shadow of barium into which the esophagus empties. This finally empties through the diaphragm into the stomach. This is a portion of the cardiac end of the stomach herniating through a dilated or relaxed esophageal opening. It may replace itself in the upright position.

2. Other hernias.

These are demonstrated by the finding of an abdominal organ in the thorax. The stomach and

colon may be recognized in contrast with the lung by their gas content, their loculation, and the presence of dense shadows in the colon from faeces. Filling with an opaque solution makes the diagnosis certain. The diaphragm itself will be shown coming up to the herniated organ but not covering it. It will also show paradoxical movement.

I. Movements of the Diaphragms

(Shown on fluoroscopic examination.)

1. *Restricted or absent* in early lung disease, pleurisy with or without effusion, subdiaphragmatic abscess, ileus, eventration.

2. *Paradoxical*, i. e., upward movement on inspiration and vice versa occurs with paralysis and hernia.

J. Value of X-ray Study of the Diaphragms

The diaphragms form an ideal subject for roentgen examination. Their form and movement are beautifully delineated. Hernias of the diaphragm are rarely diagnosed without the aid of the roentgen method and in all the diseases noted, with the possible exception of subdiaphragmatic abscess, the X-ray study is the most important means of diagnosis.

THE PLEURA

A. General Considerations

Normally the shadow of the pleura can only be seen when the films are taken at an angle and then only at the points of reflection over the diaphragms, at the mediastinum, and near the apices at the lateral chest wall and frequently in the interlobar fissure between the right upper and middle lobes.

B. Pleural Thickening

This gives a dense shadow usually in the form of a line and only at those points where the whole antero-posterior thickness of the pleura is struck by the central ray. These are best seen in the interlobar fissures, especially between the right middle and upper lobes, at the apices and above

the diaphragms. Complete obliteration of the pleural cavity occurs without any x-ray signs, however.

Secondary findings of pleural thickening are: Retraction of mediastinum or diaphragms, collapse of the lung. Calcification may occur giving a very irregular, non-homogeneous, extremely dense shadow.

C. Pleural Effusion

1. Free-serous.

- a. Is first seen in obliteration of the costophrenic angle.
- b. Diaphragm is immobilized and displaced downward later.
- c. Fluid rises as a dense smooth homogeneous shadow in contrast with the lung above it—which is only slightly cloudy—the upper surface being curved, the highest point at the periphery. A fine dense line may be seen above this, curving almost to the apex and only apparent at the extreme periphery. Not all fluids tend to produce this distinct curved upper surface. It is best seen in children while it is least obvious in hydro-thorax from cardiac failure.
- d. Displacement of the mediastinum including the heart and trachea to the opposite side always occurs unless there has been some previous fixation.
- e. The whole hemithorax may be obliterated, the shadows of the diaphragm, heart, lungs all being covered up by the dense shadow of the fluid.
- f. The shadows of the ribs can be seen faintly and the interspaces appear larger than normal.
- g. Marked change in the position of the fluid takes place with change in position of the patient except when adhesions have formed when the movement of the fluid may be greatly restricted. This shifting of the fluid may be utilized to demonstrate intrapulmonary lesions which were covered up by the fluid in one position by changing to another position. Furthermore the distinction between pleural thickening and early effusions may also be aided by this maneuver.
- h. By placing the patient in the lateral decubitus position and making a postero-anterior roentgenogram, small effusions which are not visible in the usual upright position may be detected. The fluid gravitates from the sub-diaphragmatic pleural space, where its shadow is lost in that of the dense abdominal structures, into the lateral pleural space and is seen

as a ribbon of density parallel to the lateral chest wall.

2. Empyema.

This gives the same findings as above except that adhesions may prevent the formation of the curved fluid level, or the displacement of the mediastinum. There is much less tendency toward free movement of purulent effusions. In children they may produce a characteristic ribbon-like shadow at the periphery extending from diaphragm to apex.

3. Hemothorax.

The shadow produced is more mottled and irregular but is otherwise similar to a simple effusion.

4. Encapsulated Effusion.

a. Technical considerations.

The demonstration and the localization may be greatly assisted by fluoroscopic examination in various positions and by films taken in the lateral and antero-posterior positions as well as the postero-anterior. In the case of the interlobar exudates a plate taken with the patient in a position of marked lordosis may be very valuable.

b. Findings.

- (1) Interlobar effusion may give a dense, well outlined shadow corresponding to the interlobar line. These are usually triangular with the base at the hilum. They may be best seen between the right middle and upper lobes but may appear anywhere. Occasionally they are diamond shaped.
- (2) Other encapsulations occur between the lung and the diaphragm simulating a subphrenic abscess or attached to the posterior wall where they can be well demonstrated as a sharply outlined, rounded, dense shadow if the film is taken with the patient supine. They may be multiple and occasionally show loculation. Apical empyemata occur rarely and give a dense shadow extending from the periphery of the lung toward the root with a rounded lower edge.

D. Pneumothorax

1. A *homogeneous* very radiable area in the lung field showing an absence of the characteristic lung markings is seen.
2. The *edge* of the *collapsed lung*, appearing as a dense sharp line in contrast with the marked radiability of the pneumo-thorax area, can be visualized.

3. *Adhesions* from the pleura to the lung may appear as dense bands extending from the edge of the collapsed lung to the lateral chest wall.
4. The *diaphragm* is *flattened* out and displaced downward, the mediastinum is displaced to the opposite side.
5. If the pneumothorax is extreme the mediastinal pleura may appear as a dense longitudinal band on the opposite side at a variable distance from the cardiac shadow (often called *mediastinal hernia*).

E. *Hydropneumothorax*

Fluid and air combined tend to give:

1. With the patient upright, a dense shadow, in the inferior portion of the chest, which has a *flat level* and above it an area of greatly decreased density with loss of lung markings will be seen.
2. Movement of the patient may show a *splash* of the fluid or a change in the level.
3. In the *prone position*, the *level disappears* and a thin shadow is present over the entire hemithorax.
4. If encapsulated it may give a *localized area of increased density* with an area of pneumothorax above it, usually with rounded borders.

F. *Tumors*

1. These may give only pleural *thickening* and *effusion*. The latter is often associated with lung tumors also.
2. *Endothelioma* occasionally gives multiple rounded dense shadows which are well shown if pneumothorax is done. Occasionally multiple small encapsulated effusions simulate this appearance. Frequently the whole pleura is involved in the tumor and produces a diffuse thickening with retraction of the mediastinum. Superimposed effusion is a common finding.

G. *Value of X-ray Examination in Diseases of the Pleura*

Adequate study of the pleuræ cannot be made without the aid of fluoroscopic and roentgenographic examinations. By this means the earliest diagnosis of pleural effusions both purulent and non-purulent can be made. Pneumothorax, frequently not obvious clinically, can be definitely determined and the value of roentgen examination on the whole cannot be overestimated.

THE LUNGS, TRACHEA, BRONCHI

A. *Value of X-ray Examination*

No case suspected of pulmonary disease should be permitted to go without adequate x-ray examination. The absence as well as the presence of lung pathology can be demonstrated, and the demonstration of the former is just as important as

the latter. The x-ray findings present a visual picture of the pathology present which is far superior in many respects to the physical findings and is of the first importance in the diagnosis of lung disease.

B. *Technical Considerations and Methods of Examination*

1. *Fluoroscopy.*

This is of value in determining the movements of the diaphragms, the position of the mediastinum, the aeration of various parts of the lung, and the detection and localization of gross changes especially pleural encapsulations, abscess, extensive tuberculosis. It is of little value in the detection of early lung changes and of especially little value in the diagnosis of early tuberculosis.

2. *Stereoscopic films.*

These are made to give the three dimensions and determine the depth of small lesions. They are of particular importance in the diagnosis of early tuberculosis, in the localization of small lesions, in the determination as to whether a shadow is pleural, pulmonary, or extra pulmonary in origin.

3. *Other film examinations.*

- a. Lateral views of the chest are of great importance especially in the determination of small pleural encapsulations, lung abscess, localization to various lobes, posterior mediastinal lesions.
- b. Postero-anterior and antero-posterior views are often more helpful than lateral views.
- c. Films made with the patient in the position of lordosis often, especially in children, will show clearly that a lesion thought to be pulmonary, is actually an interlobar effusion.

In general, the films taken should be adjusted to the individual case and the routine production of stereoscopic postero-anterior films is not sufficient to make all diagnoses.

4. *Technical errors.*

The technique of taking chest films is of the first importance and great errors in interpretation may be due to errors in technique.

- (1) A small focal spot must be used.
- (2) High speed in taking films is imperative.
- (3) Film-target distance should not be under 36 inches.
- (4) Intensifying screens must have good contact, be fast, and flawless.

- (5) Both over and under exposure must be avoided.
- (6) The patient must be absolutely still and stop breathing. Many diagnoses of tuberculosis have been falsely made because of movement of the patient, poor screen contact, or a tube with a broad focal spot.

C. Normal Appearance

1. *The trachea and bronchi.*

The trachea appears as a longitudinal strip of lessened density lying over the cervical spine in the midline and passing down into the thorax to its subdivision into the two main bronchi. These can often be seen clearly especially in children as areas of lessened density and the lower bronchi can be followed, the right being straighter than the left. Beyond the larger main branches the bronchi cannot be normally seen although their walls contribute to the shadows of the linear markings. Occasionally calcification of the trachea and bronchial cartilages occur to a sufficient extent to make them very clearly visible.

2. *The lungs.*

These produce two areas of lessened density showing characteristic markings due to their structure, air filled vesicles surrounded by blood vessels.

- a. Hilum or root shadows. These are irregular areas of density on each side of the heart, the left somewhat hidden by the heart, and composed of the larger bronchi, pulmonary vessels, and tracheo-bronchial lymph nodes. Normally the larger vessels can be traced into this shadow and out of it. Small, very round areas of density are seen within and around it representing blood vessels seen on end at a bend.
- b. Linear markings pass out from these hilum shadows as a group of radiating lines of density, heavier near the root and becoming thinner until they are almost invisible at the periphery. They are always heavier in the distal portions. These are formed by the pulmonary vessels and the walls of the bronchi.
- c. Anatomical divisions.

- (1) The *apex* is that portion of the lung above the clavicle.
- (2) The subclavicular region is just below it.
- (3) The base is that portion above the diaphragms.

- (4) The lungs pass below the visible dome of the diaphragm, but are not visible in this region in the ordinary lung films.

- (5) The lobes are situated as follows: Right lung-upper lobe from apex to fourth rib anterior, lower border being a sharp transverse line; middle lobe as a triangular area with base at hilum, upper border sharp and transverse, lower border oblique and hazy; lower lobe best seen in lateral view occupying posterior and lower portion. Left lung-upper lobe occupying upper and anterior portion of chest; lower lobe occupying lower and posterior portion of chest; the border between ill-defined in antero-posterior view but well seen in lateral view as an oblique line from posterior above to anterior below.

- d. Effect of respiration. Inspiration increases markedly the radiability of the lungs especially at the bases but even at the apices. Cough increases radiability of the apices. The latter show less radiability than the other portions of the lungs.
- e. Effect of heart pulsation. Rapidity of pulse produces haziness about the hilum region and even in the outer portions of the lungs due to movement of vessels.
- f. External influences.

The pectoral muscles, breasts, nipples, clothing, skin, tumors, all may cast distinct shadows in contrast with the lung fields, which must not be considered abnormal.

- g. Anatomical variations.

- (1) Falciform shadow—a line of increased density extending from the apex of the right lung to the hilum shadow with a “plumb-bob” shaped end. This appears in a small percentage of normals and is due to a branch of the azygos vein running through the interlobar pleura between the right upper lobe and a small anomalous extra lobe at the apex called the “azygos lobe.”
- (2) Calcification in the hilum shadow, so common in the adult that it is practically an anatomical variation. This is not true in children.

(To Be Continued)

THE
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MINNEAPOLIS, MINN., SEPTEMBER 1, 1931

W. L. KLEIN

After a life-time full of accomplishments expressed in a zealous interest in the health and welfare of humanity, William L. Klein, publisher of The Journal-Lancet, passed away at his home on August 20th, at the age of eighty years.

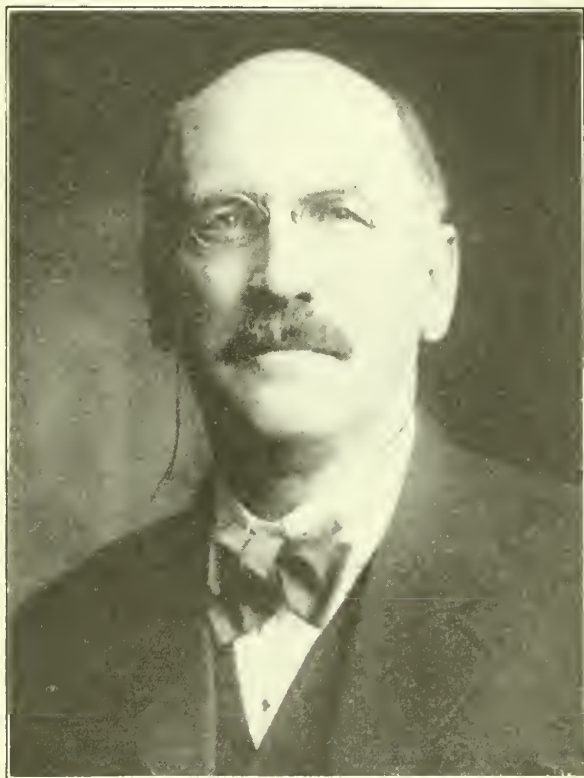
Life ever held before him a vision of good which might be accomplished. In his quiet, understanding of the ways of people, he exerted his influence in the direction of making this vision come true.

He was ever a friend of man. Letters which came to him were often letters from a stranger to a stranger, but when a reply was made, so warm and friendly was his personality, that the spirit of the letter was as a friend to a friend.

He found particular pleasure in giving advice and help to recently graduated physicians who were seeking locations and wanted assistance in starting active practice in medicine. He was a source of help and information to many hundreds of young men who went into the world of medicine and faced the need of building up a practice.

He was counsellor and advisor, and many hundreds of men in the Northwest are thankful to him for the right start when they first went into practice. He was as a father to these men and we have heard many a story of the direct and indirect help which he gave to them.

His assistance in the establishment of hospitals in this territory will always be remembered with gratitude by those familiar with the facts. His interests extended beyond the personal interest of the medical profession and reached into every communal activity, every legislative ac-



WILLIAM L. KLEIN
1851 — 1931

tivity and every movement of any sort which had any relation to the health of the community. He felt it a personal obligation to offer leadership or secure leadership for every movement of this type, and many a legislative measure and many a community's health is the better today for his untiring interests in behalf of the health of the Northwest.

Forty-five years ago regular medicine in this part of the Northwest was represented by a single medical Journal—The Northwestern Lancet, established by Dr. Jay Owens of St. Paul, in 1881. Those acquainted with the "Lancet" in

its early days can feel a little pride in its appearance and its value as medical literature.

It was at its last gasp, financially, when rescued by Dr. A. J. Stone, who was publishing it at a loss. At this time it fell under the notice of Mr. Klein who saw its possibilities and was willing to take the risk of making it a real medical journal.

He was ideally qualified for this work and his judgment in taking on this new interest was a definite contribution to medical literature.

Mr. Klein was born in Barry, Ill., January 28, 1851, and after attending Phillips Academy, was graduated from Cornell University. After his graduation from college he became head of the Normal School at Avon, N. Y. He became principal of a school in Woodstock, Ill., and later founded a book publishing company in Chicago, which still carries his name.

Mr. Klein was thus well fitted to act as publisher of *The Journal-Lancet*. He also had had considerable experience as a journalist and was a devoted student of literature, selecting his reading with excellent literary taste and judgment. His interest in literature was for the writings of the present as well as of the past, and was carried on almost until the day of his death.

Good English was ever a hobby with him and he had a particular interest in punctuation. His interest extended to the point of writing a book on "Why We Punctuate," which is a valuable contribution to a much neglected subject. It was published 30 years ago and is still accepted as a standard work. His insistence upon correct writing was reflected in the pages of *The Journal-Lancet*, for which he edited the manuscripts, seeing always that each article published was free from grammatical error and as good from a literary standpoint as possible.

From a scientific standpoint, W. L. Klein made a fine team worker with Dr. William Davis, its first talented editor, and later with Dr. W. A. Jones, whose outstanding ability is well known to most of our readers.

Failing health during the past two years made Mr. Klein realize that he could not continue with the active development of *The Journal-Lancet*. Two years ago Dr. Jones and Mr. Klein made arrangements to have the entire responsibilities assumed by others, and under their guidance and help *The Journal-Lancet* was enabled to carry on the ideals and hopes with which it was founded on the strong framework erected by William L. Klein during his fruitful years of life.

TONSILS AND ADENOIDS

The question as to advisability of the removal of tonsils and adenoids confronts the physician so frequently that information concerning the beneficial and harmful effects of such procedures which may serve as a guide in making correct decisions is indeed welcome. The efficacy of the removal of tonsils in relieving mechanical obstruction in the nasopharynx arising from hypertrophy of these tissues is generally admitted. Kaiser reports that in a series of 5,000 children examined one year after the tonsils and adenoids had been removed, in whom obstructive symptoms were the chief indications for operation, only ten per cent failed to get relief from the mechanical obstruction, the failures being due either to incomplete removal of the lymphoid tissue, nasal obstruction or to developmental defects.

The effect of tonsillectomy and adenoidectomy on the subsequent health of the individual is distinctly more difficult to determine. Opinions as to the value of such procedures based on inadequate data probably are equally apt to be correct or erroneous, thus one should not place too great reliance upon impressions gained from experience without giving due consideration to all factors involved. Kaiser recently reported a careful ten year study of 4,400 children varying in age from four to seven years, one-half of whom had had tonsils and adenoids removed, and a like number (used as controls) who presented the same indications for removal, but for various reasons, usually parental objection, were not subjected to operation. Based on the findings of this extensive survey it appears that the removal of tonsils and adenoids exerts a favorable influence on the incidents of some infections, has little or no influence on the occurrence of certain other conditions, and actually increases the incidence of a few types of infection. A favorable influence of adenoidectomy and tonsillectomy was noted with regard to head colds, sore throats, cervical adenitis, otitis media, diphtheria, scarlet fever, nephritis, dental infections and initial attacks of rheumatic fever and rheumatic heart disease. Recurrent attacks of rheumatic fever, however, were not influenced by the removal of the tonsils. Little or no favorable influence was noted in the incidence of chorea, measles, laryngitis, tuberculosis and malnutrition, and apparently the removal of tonsils and adenoids resulted in an increased frequency of bronchitis, pneumonia and initial attacks of sinusitis. Although children who have had these tissues removed, as a group may experience all the diseases which occur in non-oper-

ated children, Kaiser's observations indicate that certain infections particularly of the nose, pharynx, ears and cervical glands are to be expected less frequently in the former than in the latter group. In the individual case, therefore, there is a considerable probability that benefits may be derived from operative procedures, and also a very definite possibility that the removal of tonsils and adenoids may fail to accomplish the results desired. In view of these uncertainties, the advisability of the removal of these tissues should be decided on the circumstances of the individual case, to determine whether or not the impairment of health is sufficient to justify taking the chance that tonsillectomy and adenoidectomy will improve the situation. The question certainly is of sufficient importance to require careful study of the indications for operation in each individual case, whether the reason for the performing of a tonsillectomy and adenoidectomy is for the removal of mechanical obstruction, for the elimination of local foci of infection, or for the prevention of various diseases.

C. A. S.

THE HOSPITAL STAFF MEETING

The American College of Surgeons requires that recognized hospitals hold a meeting of the hospital staff once each month. These meetings are for the purpose of keeping the members of the staff acquainted with the medical affairs of the hospital, such as the number of admissions, births, operations and the summaries of the fatal cases; to stimulate the staff in obtaining autopsies, and in discussing ways and means of bettering the facilities for the treatment of patients, and to transact such business as is necessary in the organization of the staff.

It has become the custom for many hospital staffs to hold a dinner meeting where the members may have a pleasant hour with their associates followed by the regular business of the organization, reports of committees, and the reading of the summaries of the histories of fatal cases. It has been amply proven that if interest is to be kept up in the meetings they must be short and snappy. The chairman can by considerable tact and effort have committee reports made brief and to the point and can limit discussions to pertinent facts. It seems a waste of time to read the usual hospital statistics, as a typed or mimeographed sheet with these figures compiled can be placed at each plate. Short summaries of the fatal cases can also be available for reference on this sheet.

The discussions can be limited to unusual and interesting phases of the diagnosis and treatment of these and other cases. It is a mistake to present scientific papers suitable for the meetings of the county society or similar organization. Critiques of the methods of treatment and the results obtained in a particular disease limited to the cases treated in that hospital are in order and usually reveal considerable food for thought among the members. It is by such reviews that the staff becomes acquainted with the up to date or antiquated methods of treatment in vogue. Lack of proper diagnostic and therapeutic care is forcibly shown. It is very pleasant to listen to the good results but is of far greater importance to discuss freely our failures both of omission and commission. Constructive and friendly criticism by members of the staff should be welcomed as instructive to ourselves and beneficial to our patients.

The hospital staff meeting should not attempt to replace the county society meeting nor should it be made a practice arena for papers prepared for medical society programs, but should be strictly limited to the medical affairs of that particular hospital in so far as they concern the care of patients treated in that one institution. There is more than enough material in every hospital to furnish the intellectual medical meal and this and this only should be served.

The staff meetings should be limited to a definite time and adjourned promptly at the expiration of that designated period. To this end discussions should be brief and to the point and if the program proves to be too long part should be postponed until the next meeting. The average physician in many of our cities must attend several hospital staff meetings, and several meetings of other medical organizations every month in addition to some committee meetings and perhaps a bridge club or two. He has little time left for his family and social contacts not to speak of time for study or writing. Therefore it behooves the doctor presenting a case to study and summarize it in writing before attempting to present it before a staff. I am sure that the audience will breathe a silent prayer of thanks for his sparing them the embarrassment of watching a history chart being thumbed over for a forgotten laboratory test here and an elusive progress note there. Have a heart, gentlemen, spare our feelings and our time.

H. M. N. W.

ARTHUR HENRY TUFTS

Dr. Arthur Henry Tufts for nearly half a century a practicing physician in Sioux Falls, South Dakota, died suddenly at his home Sunday August 9, 1931, of Coronary Disease. The passing of Dr. Tufts closes a career which has been conspicuous for its altruistic devotion to others and which will long leave its impress on his community. He was the dean of the medical fraternity in his County, having been longer in active practice than any other, and there are few, if any in the State who can point to a longer service. Dr. Tufts met his problems with the lofty courage of the true pioneer and has done his work well and complete.

Dr. Tufts coverage of his community extends over three generations and in some cases the contacts run into the fourth generation. There was hardly a marriage, death, birth, defeat or an advancement in his community that was not of close personal interest to Dr. Tufts, because at some time during his long and devoted career in his community, he had in some way, touched the lives of these people themselves, their parents or their grandparents. He was a servant to his community, and as a physician, a friend, a citizen and a neighbor, he has left a record in his community which will long survive.

Dr. Tufts was born at Wardsboro, Vermont, January 14, 1856. When he was very young his parents moved to Geneseo, Illinois, where he attended school.

He began the study of medicine with Dr. C. A. Gray of Brattleboro, Vermont, taking his first course of lectures at the College of Physicians at Baltimore in 1881 and 1882, and in 1883 he was given his M. D. degree on graduation from the University of the City of New York.

Dr. Tufts is survived by his widow, two daughters, Mrs. Robert A. Perkins of Sioux Falls and Miss Helen A. Tufts of Denver, and one brother, James Payson Tufts of Denver.

JOSEPH J. MCKINNON

Dr. Joseph J. McKinnon, pioneer physician of Wadena, Minn., died at his home Friday, July 31, 1931.

Of Scottish descent, Dr. McKinnon was born in Alexandria, Ontario, Canada, July 22, 1863. He received his early education at the Christian Brothers School and Holy Cross College at Montreal. He completed his academic training at Laval

University in Quebec where he received the Bachelor of Arts degree in 1884.

After four years of teaching, he entered the medical school of the University of Minnesota and received his M. D. degree in 1893. He entered the practice of medicine at Wadena in December of the same year.

Dr. McKinnon enjoyed high rank among his professional friends and held offices in the Minnesota Medical Association and the Upper Mississippi Valley Medical Association at various times. He was actively interested also in public and communal affairs and served as Mayor of Wadena. He was a member of the Knights of Columbus, the Foresters, the Modern Brotherhood, and the Modern Woodmen.

He is survived by his widow, five children, two sisters, and two brothers.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. W. A. Lacey has moved from Helena to Havre, Mont., where he will continue general practice.

Dr. T. C. Kreuzer, who has been in active practice for many years at Winona, is now located at Owatonna, Minn.

Dr. D. E. Moorhead, formerly at the Mayo Clinics, is now associated with Dr. A. B. Stewart, at Owatonna, Minn.

Dr. Neil McLean, Devils Lake, N. D. was recently married to Miss Jessie M. Anderson of Edmonton, Canada.

Dr. J. A. Cosgriff, Olivia, Minn., is spending several weeks in New York, where he is taking a postgraduate course of study.

Dr. H. A. Owenson, who has been in active practice at Minot, has moved to Arnegard, N. D., where he will continue practice.

A new hospital at Harlem, Montana, was dedicated last month. The building is modern in every respect and cost \$130,000.

Dr. A. H. Tufts, the oldest practicing physician in Sioux Falls, if not in South Dakota, died on August 9th at the age of 75 years.

Dr. W. Pangman, formerly connected with St. John's Hospital at Fargo, has opened offices for general practice at Wahpeton, N. D.

Dr. R. K. Miller, from Detroit, Mich., has recently opened offices at Brookings, S. D., and will make a specialty of eye, ear and throat practice.

Dr. G. H. Hilts, Bowbells, N. D., has been named Coroner of Burke County. Dr. Hilts is well known as one of the pioneer physicians of that state.

Dr. F. B. Lodge, Steele, N. D. has sold his practice to his former associate, Dr. De Witt Baer, and will make his future home at Long Beach, Calif.

Dr. A. E. Naegeli has returned to his offices in St. Paul, after spending three months' vacation in traveling through England, Germany, Austria, and France.

Dr. H. L. Lamb and family, Little Falls, Minn., have returned from a three months' trip in London, Europe, where the Doctor visited many of the leading clinics and hospitals.

Dr. Charles L. Farabaugh, who has been in practice during past five years at Robbinsdale, Minn., has taken over the practice of the late Dr. Charles Gault, at Owatonna, Minn.

New England, N. D., has a new physician and surgeon. Dr. L. P. Veigel, a graduate of the Northwestern University of Chicago, has recently opened offices for general practice.

Dr. Howard R. Mahorner, who has been located at Aberdeen, S. D., for several years, is now associated with the Tulane University at New Orleans, in the department of surgery.

Dr. A. W. Cowan, who has recently been practicing at St. Paul, but formerly at Aberdeen, is now permanently located at Redfield, S. D., where he will continue his general practice.

Dr. J. L. Rothrock, St. Paul, one of the best known obstetrics specialists in the Northwest, has decided to retire from his active practice, after forty years of hard, but very successful work.

Dr. J. C. R. Charest died recently at his old home in Marshall, Minn., after a short illness of a few weeks. Dr. Charest had been in active practice at Sioux Falls, S. D., for the past year.

The Southwest Division of the North Dakota Medical Society held their July meeting at Mott and several scientific papers were presented and discussed. Dr. D. Lemieux, New England, presided.

One Dr. Doran was recently jailed at Albert Lea, Minn., charges being that he was an itinerant

doctor, practicing without a license. The doctor was unable to secure bail and was held for trial.

Dr. C. E. Stackhouse, Bismarck, has resumed his active practice again, after several weeks in convalescing from his operation for appendicitis at a Minneapolis hospital.

The Minnesota State Registered Nurses will hold their annual meeting at Fergus Falls, September 24 to 26. Miss Olive T. Peterson, Minneapolis is president of the association and will have a fine list of speakers on the program.

Dr. W. R. Morrison, one of the prominent physicians of Billings, Mont., has been elected president of the Medical Reserve Association of that state. The membership of this organization is nearly 500 and constantly increasing.

The Lincoln Hospital at Aberdeen, has been sold to the Evangelical Lutheran Good Samaritan Society of Fargo. The hospital has about 80 beds, four stories, fireproof and modern, and cost over \$250,000.

Dr. J. C. Fawcett, who has been associated with his father, Dr. W. C. Fawcett, at Starkweather, during the past year, is now located at Devils Lake, N. D., where he has opened offices for general practice.

Dr. J. J. McKinnon, who has been in active practice at Wadena, Minn., for forty years, died recently after a short illness of arterio-sclerosis. Dr. McKinnon was a leader in all social and business activities and will be sadly missed by a wide circle of patients and friends.

Dr. H. J. Rowe, so well known to the physicians of North Dakota, being secretary of the State Medical Society for nearly 20 years, has been seriously ill at his Minneapolis home but at this writing, he is showing a marked improvement, and will soon be able to greet his many friends again.

Dr. G. J. Guldseth, Lake Preston, S. Dak., who was married recently to Miss Elsie Nummedal, Minneapolis, has left Lake Preston for a short visit in Minneapolis and will sail for China about Sept. 15, where he goes as a medical missionary at Peking.

Dr. E. J. Ecklund, Norwood, Minn., was host to the members of the Scott-Carver County Medical Society at their regular monthly August meeting. After a fine dinner was served, Drs. Chas. R. Drake and Carl Anderson, both of Minneapolis were the speakers.

Designation of the Mayo Clinic at Rochester as a diagnostic center for World War veterans has recently been made by the government. The veterans' administration at Washington have entered into a contract with the Mayo Clinic and the facilities of the famous Minnesota medical center now are available to service men.

Dr. R. F. Bellaire, one of the prominent physicians of Sioux City, Iowa, died last month, after an illness of six months duration. Dr. Bellaire was well known among the medical men of Iowa and both Dakotas, as he had been in active practice for past fifteen years and was an officer and leader in state medical societies.

The summer meeting of the Upper Mississippi Medical Society was held at International Falls, Minn., and among the speakers were Drs. Philip F. Eckman, Duluth, "Secondary Anemias"; Lawrence R. Gowan, Duluth, "Localization of Spinal Cord Tumors"; William W. Lewis, St. Paul, "Inflammatory Infection of the Middle Ear"; and Paul G. Boman, Duluth, "Newer Methods of Diagnosis in Diseases of the Lung."

The Watertown, S. D., District Medical Society held their August meeting at Watertown with a good attendance and after dinner being served, enjoyed the following program: "Abdominal Injuries," Dr. A. J. Paulson, Watertown; "Some Questions of General Interest in the Treatment of Goiter," Dr. Martin Nordland, Minneapolis. Dr. Nordland also showed two films, one on the anatomy of the thyroid gland and one on the technique of thyroidectomy.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month of September will be as follows: September 2—Lockjaw Prevention. September 9—Peptic Ulcer, September 16—Nutrition Education in Our Schools. September 23—Bichloride of Mercury Poisoning. September 30—Hodgkin's Disease.

Dr. S. A. Slater, superintendent of the Southwestern Minnesota Sanatorium at Worthington, returned recently after a two months' trip to medical centers of Europe. In equipment and methods Dr. Slater believes the European medical schools and hospitals to be less advanced than those in the United States. In other phases of their life too he noted a decided difference. Few of the

people have the luxuries which are enjoyed here and many of them are in absolute poverty. Dr. Slater left Worthington early in May and attended the meeting of the National Tuberculosis Association at Syracuse, N. Y., before sailing for Europe.

Charles Lobac, 37 years of age, who claims to be a barber from Fresno, Calif., recently entered a plea of guilty to violating the Basic Science Law in the District Court at St. Paul. The defendant was arrested in St. Paul where he plied his trade of selling a preparation called "Radian." The charge was one dollar per bottle and the compound was alleged to cure everything from cancer to loose teeth. After spending six days in the county jail the defendant heard the call of the harvest fields, entered a plea of guilty and was sentenced to 30 days in the workhouse. The sentence was suspended after the defendant made an earnest plea to the Court that he be given a chance to leave the state and work in the harvest fields.

The Minnesota State Fair will open this year on Saturday, September 5, and continue through until September 12, 1931, and the officers are looking for a very large attendance. The list of entries in all departments are larger and more complete than for many years, and with admission being reduced to 50 cents, is certain to greatly increase the attendance from outside of the Twin Cities. Every medical man in the Northwest will find many items that will be of direct advantage to him by a visit at this great show this year. Each of the seven days has some very attractive features, and we advise all of our physicians to arrange to be at the fair and enjoy these Educational Exhibits, as many new objects of interest will be found in the different buildings.

The Southern Minnesota Medical Association held their annual meeting at Faribault on August 24th, with a large attendance and a fine program was presented. Officers for the coming year are Dr. Chas. C. Allen, Austin, president; Dr. R. V. Williams, Rushford, and Dr. B. J. Gallagher, Waseca, vice presidents; Dr. M. C. Piper, Rochester, secretary-treasurer. Dr. W. P. Herbst, Minneapolis, was awarded a medal for his exhibit dealing with treatment of kidney ailments while Theodore C. Erickson, Minnesota university medical senior, was presented with the society's medal for the senior student of medicine showing the greatest proficiency in the clinical fields of medicine and surgery.

MISCELLANEOUS

Minnesota Medical Alumni Association Homecoming

The Minnesota Medical Alumni Association Homecoming program will be held this year October 30th at one of the auditoriums at the University. The tentative program scheduled, should be of distinct advantage and benefit to all alumni of the State. Dr. E. Starr Judd of the Mayo Clinic at Rochester will speak in the morning on "The Present Status of Surgery of the Gall Bladder." Dr. S. Marx White, Minneapolis, President of the American College of Physicians, will speak in the afternoon on the "Unimportant Heart Murmur."

With Dr. Judd in the morning program will be, Drs. Irvine McQuarrie, Minneapolis; John Butler, Minneapolis; C. N. McCloud, St. Paul; J. M. Hayes, Minneapolis, and J. R. Aurelius, St. Paul. In the afternoon with Dr. White will be, Drs. R. E. Scammon, Minneapolis; T. J. Kinsella, Oak Terrace, and J. C. McKinley, Minneapolis, who has promised some very interesting moving pictures of neurological conditions. The afternoon program will be completed by orthopedic and gynecological clinics. The business meeting will be held at noon, at which time the Millard Memorial, planned at Stillwater will be dedicated.

Attention is called to the date of the meeting, which is on Friday, the day before the homecoming game. This should attract at least as good an attendance as two years ago when the Eustis amphitheatre was practically filled.

MISSISSIPPI VALLEY CONFERENCE ON TUBERCULOSIS**TENTATIVE PROGRAM****SANATORIUM SECTION MEETING**

Hotel St. Paul, St. Paul, Minnesota
September 21 and 22, 1931

Monday, September 21—9:30 A. M. to 12:30 P. M.

Dr. E. R. Van Der Slice, Presiding

9:30 A. M. "Tuberculin Testing by Districts in Minnesota"—Dr. W. S. Broker, Otter Tail County Sanatorium, Battle Lake, Minn.
Discussion (10 min.)—Dr. Mary C. Ghostley, Lake Julia Sanatorium, Puposky, Minn.

10:00 A. M. "Phrenico-Exeresis in the Treatment of Lung Disease"—Dr. Jerome R. Head, Chicago, Ill.
Discussion.

10:30 A. M. "Increasing Importance of Silicosis"—Dr. A. W. Gray, Milwaukee, Wis.
Discussion.

11:00 A. M. "X-ray Clinic" (To demonstrate the value of serial x-ray films in determining the progress of tuberculosis.)—

(A) Dr. G. D. Kettelkamp, Robert Koch Hospital, Koch, Mo.

(B) Dr. C. F. Taylor, Kansas State Sanatorium, Norton, Kan.

(C) Dr. Paul D. Crimm, Boehne Hospital, Evansville, Ind.

(D) Dr. W. M. Spears, Oakdale, Ia.

Monday, September 21—2:00 to 4:30 P. M.

Dr. F. L. Jennings, Presiding

2:00 P. M. "Spontaneous Pneumothorax"—Dr. Max Biesenthal, Chicago, Ill.
Discussion.

2:30 P. M. "Endoscopy in the Diagnosis and Treatment of Non-Tuberculous Diseases of the Lungs" (Lantern)—Dr. Wm. A. Hudson, Detroit, Mich.
Discussion.

3:00 P. M. "Conservative vs. Surgical Treatment of Bone Tuberculosis"—
"Conservative Treatment"—Dr. Robinson Bosworth, Municipal Tuberculosis Sanatorium, Rockford, Ill.
"Surgical Treatment"—Dr. Melvin S. Henderson, Mayo Clinic, Rochester, Minn.

4:00 P. M. (A) "What the X-ray shows in Tuberculin Reactors"—Dr. L. G. Rigler, University Hospital, Minneapolis, Minn.
(B) "Types of Lesions Noted"—Dr. J. A. Myers, Minneapolis, Minn.

Discussion.

Monday, September 21—Evening Session, 8:00 to 9:20
P. M., Glen Lake Sanatorium, Oak Terrace, Minn., Dr. E. S. Mariette, Presiding

8:00 P. M. "Tuberculosis Treatment Plus the Three Rs"—Dr. David A. Stewart, Associate Professor of Medicine, University of Manitoba, and Superintendent of the Manitoba Sanatorium, Ninette, Manitoba, Canada.

8:20 P. M. "The Advantages of Surgical Facilities in a Sanatorium"—Dr. Jerome Head, Chicago, Ill.

8:40 P. M. "Scope and Possibilities of a Laboratory in a Tuberculosis Sanatorium"—Speaker to be determined.

9:00 P. M. "Progress in the Sanatorium Treatment of Tuberculosis During the Last Ten Years"—Dr. Walter J. Marcley, President, Mississippi Valley Conference, and Chief of the Tuberculosis Division of the Veterans' Hospital, Minneapolis, Minn.

Tuesday, September 22—9:00 A. M. to 12:00 M.

Dr. Alfred Henry, Presiding

9:00 A. M. "The Need for Medical Social Service Work in Sanatoria"—Miss Marguerite A. Ridler, Director of Social Service, Glen Lake Sanatorium, Oak Terrace, Minn.

Discussion—Dr. Hoyt E. Dearholt, Executive Secretary, Wisconsin Anti-Tuberculosis Association, Milwaukee, Wis.

9:30 A. M. "Interesting Case Reports" (Each case to include a history, complete clinical information, x-ray records and films, autopsy record, macroscopic and microscopic demonstration.)

(A) Dr. Wm. S. Middleton, Associate Professor of Medicine, University of Wisconsin, Madison, Wis.

(B) Dr. V. V. Norton, Hamilton County Tuberculosis Sanatorium, Cincinnati, Ohio.

(C) Dr. F. L. Jennings, Glen Lake Sanatorium, Oak Terrace, Minn.

(D) Dr. R. H. Morgan, Detroit, Mich.

11:30 A. M. "Tuberculosis in a Rural District"—Dr. Edwin J. Simons, Swanville, Minn.

Discussion—

(5 min.)—Dr. Herman Hilleboe, Swanville, Minn.

(5 min.)—Dr. J. A. Myers, Minneapolis, Minn.

Tuesday, September 22—1:30 to 4:45 P. M.

Dr. E. R. Ban Der Slice, Presiding

1:30 P. M. "Principles of Out-Patient Work in a Sanatorium"—Dr. Geo. McL. Waldie, Copper County Sanatorium, Houghton, Mich.
Discussion.

1:50 P. M. "Following Up Sanatorium Patients"—Dr. Geo. Thomas Palmer, Palmer Sanatorium, Springfield, Ill.

2:15 P. M. "Does Childhood Tuberculosis Require Hospitalization?"—

Proponent—Dr. C. L. Hyde, Springfield Lake Sanatorium, East Akron, Ohio.

Opponent—Dr. C. A. Stewart, Associate Professor of Pediatrics, University of Minnesota, Minneapolis, Minn.

Discussion.

3:00 P. M. "Is the Sanatorium a Safe Place for Nurses?"—Dr. E. S. Mariette, Glen Lake Sanatorium, Oak Terrace, Minn.

Discussion.

3:30 P. M. "Is a Good History 50% of the Diagnosis in Tuberculosis?" (With charts.)—Dr. Oscar Lotz, Wisconsin Anti-Tuberculosis Association, Milwaukee, Wis.

Discussion.

4:00 P. M. (A) "Tuberculin Reaction—What Is It?"
(B) "Does a Positive Reaction to Tuberculin Mean More Than Infection with Tubercle Bacilli?"—Speaker to be determined.

Discussion.

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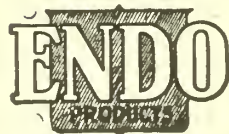
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THE EARLY TREATMENT OF INJURIES OF THE EYEBALL*

BY ARCHIE D. McCANNEL, M. D., F. A. C. S.

MINOT, NORTH DAKOTA

In all branches of industrial surgery the two principal objects in the treatment of a case are; first, to obtain a result which gives a minimum amount of disability, and, second, to get the patient back on the job as soon as possible.

When the patient presents himself with the statement that there is something in his eye, a history should at once be obtained as to the conditions under which the accident occurred; if possible, a record of the visual acuity should be made because of its great importance in the matter of compensation.

Perhaps in no class of wounds is the first treatment more important for the attainment of good results than in the wounds of the eyeball. Many cases are necessarily seen first by the general surgeon, so it is imperative that he be able to render intelligent treatment, and that he also have a realization of possible later complications of even the simplest injury.

The thing to be avoided is an opacity in the cornea which will only follow if there has been an infection. The manner in which this takes place is best understood by having a good knowledge of the histology and physiology of the cornea.

The cornea is covered externally by a layer of pavement epithelium which is four or five cells in thickness. This epithelium has a remarkable resistance to infection as well as regenerative power, and will cover any defect very quickly if not held back by infection, and if the eye is given physiological rest.

Beneath the epithelium is a fairly tough homogeneous or glass membrane, Bowman's membrane, which is quite impervious to infection when un-

broken. It will also regenerate quite quickly if unhindered.

Next is the substantia propria corneae, which is made up of lamellae of transparent collagenous fibrillae, between which are fixed cells or corpuscles and wandering leucocytes. This substance is much less resistant to infection than the two overlying layers. Then comes another very tough glass membrane, Descemet's membrane, and a layer of endothelial cells. Descemet's membrane is very elastic and will resist necrosis long after all the other layers have been destroyed.

By far the most common form of trauma to the eyeball is caused by the entrance of a small particle which lodges somewhere in the conjunctiva or the cornea. The danger in these cases results from infection, either by organisms already in the conjunctival sac, on the foreign body, or organisms carried into the eye in attempting to remove it.

If the foreign body is not on or in the cornea, its removal is very simple and usually is accomplished by means of a cotton swab. In doing this the possibilities of infection should be borne in mind. The swab must be sterile, and it is well to instill a few drops of some antiseptic (boric acid) after the removal. Before discharging the patient, a careful inspection of the corneal surface should be made to see that there are no breaks in the epithelium, and he should be ordered to return if the feeling of irritation persists more than twelve hours.

If the foreign body is embedded in the epithelium, and it is removed without injuring Bowman's membrane, infection will rarely take place, and the epithelium covers the defect in a

*Read before the Great Northern Railway Surgeons' Association at Glacier Park, Montana, June 30th, 1931.

very short time. If the foreign body has penetrated Bowman's membrane and is removed early with aseptic precautions, regeneration will usually take place so rapidly that infection is shut out. It is very easy for the surgeons to plant organisms into this cornea by careless technic.



EXAMINATION BY OBLIQUE ILLUMINATION

When Bowman's membrane is penetrated, and the case is first seen later than twenty-four or more hours after the injury, there is often a narrow zone of grey infiltrate about the foreign body. Here the superficial corneal lamellae are necrotic, and wandering corneal leucocytes have invaded them to stamp out the infection which is there. When the wound is infected healing may take place rapidly, or the invading organisms may increase, in which case their toxins must flow through the interlamellar lymph spaces to the limbus before reaching any blood supply. Then serum and leucocytes must travel back to the site of the injury to be effective against the organisms.

Because of this long distance between the two locations, healing is slow, and the infection may not easily be overcome. The septic process may be held in check for some time and heal slowly, or it may progress, causing more and more necrosis until we have the formation of a well-developed ulcer. The ulcer enlarges by the spread of organisms between the lamellae and the formation of new colonies whose toxins cause necrosis and sloughing of the overlying tissue. In this way a large part of the cornea may be destroyed.

In the more severe types of ulcer the cornea may be perforated, in which case an infection of

the whole eyeball with total destruction may follow.

Healing is accomplished by the usual invasion of fibroblasts and connective tissue formation; the scar is not transparent (leukoma), and vision is consequently impaired.

Frequently a patient comes in complaining of a foreign body in the eye, when there is none, but there may be a slight abrasion of corneal epithelium.

Again a patient may complain of a foreign body being received while pounding on a piece of metal, and on casual examination no foreign body can be found; in these cases it is well to give the eye a thorough examination, as a minute particle may have perforated the cornea and lodged in the interior of the eye, in the lens or vitreous, giving the patient no sense of discomfort.

In this class of cases, an X-ray of the eye should be taken, preferably two pictures, and the foreign body localized.

The disposition of so many of the men in treating what they would call a minor accident is to take it too lightly. I believe that every case that comes into your hands should be very carefully examined before anything is done. We must always bear in mind that most corneal ulcers, with so often disastrous results, develop from a trivial or minor injury.

Examination:

1. Anaesthesia

Butyn is the anaesthetic of choice, as it gives a very quick anaesthesia, and does not soften the corneal epithelium.

Cocaine has the disadvantage of softening the corneal epithelium, which decreases its resistance to trauma and infection, and it also dilates the pupil which in some cases is a decided disadvantage.

2. Inspection

Good light is very necessary and oblique illumination by means of a lens gives the most convenient and satisfactory illumination. The naked eye, even with good illumination, is not enough, and it is good practice to get into the habit of making your routine examination by means of a magnifying loupe.

Fluoresin should be used in all cases to determine the extent of the injury. It will also reveal slight corneal abrasions, which are so difficult to detect otherwise.

3. Asepsis

As much care should be used as in any clean operation.

4. Removal of foreign body

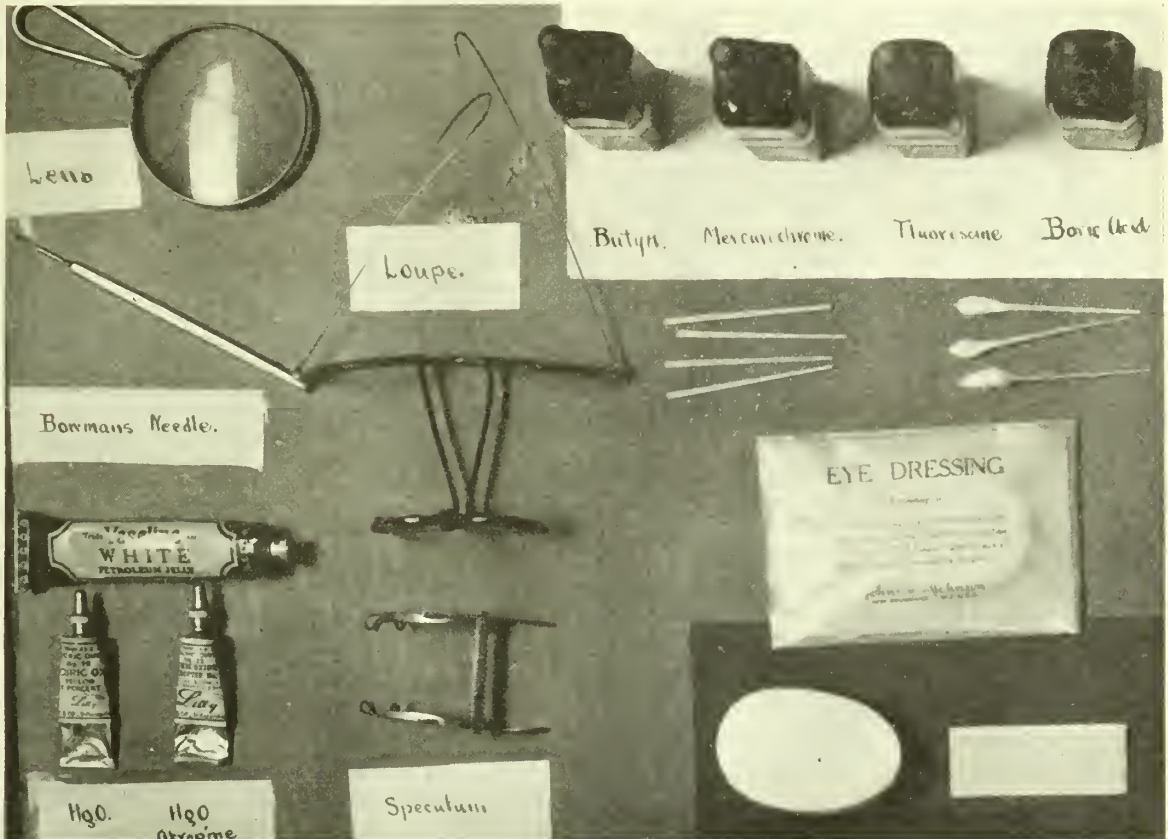
If in the cornea, it is best done with

sharp spud (Bowman's Needle), great care being taken to remove all burned and devitalized tissue because healing will be delayed and eye will be uncomfortable as long as it remains.

It is often well, when the foreign body has been in the eye from twenty-four to

in twenty-four hours and at intervals thereafter until the wound is completely healed.

Every patient reporting with a foreign body on the cornea should be impressed with the great importance of reporting early. If the physician is unable to remove



EXAMINATION AND TREATMENT TRAY

forty-eight hours and there is considerable sloughing tissue around the site of foreign body, to cauterize gently with pure phenol, after removing the sloughing tissue. Before bandaging, it is well to irrigate the eye with a mild antiseptic, then to decide whether atropine should be used. This will depend on whether the foreign body has been deeply embedded (through Bowman's membrane), and if the eye shows any ciliary congestion. In both cases atropine should be instilled.

Bandage—Every case where there has been a break in the corneal epithelium should be bandaged, using a comfortable patch, as it prevents the lid from constantly brushing over the wound and the smooth palpebral conjunctiva aids epithelial proliferation.

5. Observation: The patient should report

the foreign body or does not wish to attempt it, he should instill a mild antiseptic ointment and put on a bandage.

The first-aid measure of greatest importance is a well-applied pressure bandage. To see an injured eye come in with a well applied bandage is to me very much the exception. The bandage should give a firm, even pressure, and be secure enough so it can not slip. I think this fact should be impressed upon foremen and others referring the cases, as it not only gives the patient great comfort, but also prevents any extra danger of infection.

The custom of having another workman remove the foreign body with a pencil, handkerchief or whatnot often results in more harm being done, and should be discouraged. The opportunity of emphasizing the value of preventative measures, such as

goggles, should be embraced. By methods somewhat similar to the above, Van Kirk reports a decrease of over 400 per cent in corneal ulcers occurring in a large Pittsburgh steel mill.

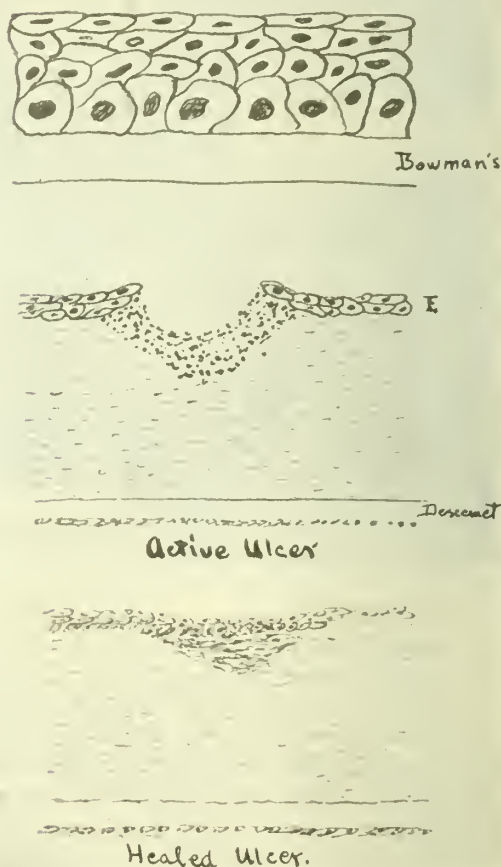
Another class of injuries to the front of the eye which require prompt intelligent treatment are chemical burns. Permanent corneal opacities and adhesions between the eyelids and ball are the serious outcome; the former due to coagulation of the superficial lamellae of the cornea, and the latter to excoriation of the conjunctiva.

Pain may be relieved by butyn or holocain, and the conjunctival sac must be

tion of one-half per cent holocain in sterile liquid petrolatum to remove pain and protect the cornea against the swollen and roughened conjunctiva.

The more severe injuries of the eyeball may be included in two groups; those in which the outer coats are not ruptured, and those in which they are. It is impossible to go into a complete discussion of these injuries, but I wish to point out some of the later complications that can be avoided in part, at least, by proper early treatment.

That the eyeball is not ruptured can be determined by the fact that its tension is not greatly reduced. Here we have two



thoroughly irrigated, using a neutralizing solution—saturated boric or weak acetic acid if it is an alkali burn, and five per cent solution of sodium bicarbonate if acid. The lids should be turned over to be sure the cul-de-sacs are cleansed, and the irrigation or instillation of the neutralizing agent repeated for some time.

Burns by fire or hot metals can be palliated by the careful removal of any foreign substance, a bandage, and the instilla-

main conditions to deal with; namely, intra-ocular hemorrhage, and rupture or displacement of intra-ocular structures, usually accompanied by hemorrhage either in anterior chamber or in the vitreous.

The first indication in intra-ocular hemorrhage is to stop and prevent further hemorrhage. This can be aided by immobilizing both eyes by bandaging, keeping the patient absolutely quiet, and possibly the administration of some preparation of

hemostatic serum. After twelve or more hours absorption will be aided by a brisk calomel and saline purge, sweats, and heat to the eye.

In all cases of intra-ocular hemorrhage, especially those in the anterior chamber which clear up in twenty-four to forty-eight hours, the prognosis to the patient should be guarded, as the trauma often leads to changes to the lens capsule and lens, producing traumatic cataract which permanently impairs the vision.

If the eyeball is ruptured, we have the added factors of infection and loss of intra-ocular structures to deal with. We have an open pathway by which sepsis can

reach the interior of the eye, and through which the iris, ciliary body, choroid, lens, etc., may be partially prolapsed. The first thought in all these cases should be conservation; many eyes, that at first sight appear quite hopeless, can be given some degree of usefulness, and the sooner the case is in the hands of a competent oculist the better. And, I might add, the less that has been done to the eye the better.

The varieties and complications of perforating eye injuries are too numerous to mention, but let me say again that many apparently hopeless cases will come out with some usefulness, and the first thought always should be to save.

INSULIN IN THE TREATMENT OF ANOREXIA IN NONDIABETIC TUBERCULOUS PATIENTS*

By ELIZABETH A. LEGGETT, M.D. AND F. F. CALLAHAN, M.D.

Pokegama Sanatorium

POKEGAMA, MINNESOTA

Insulin has been used since 1923 in the treatment of nondiabetic patients. In pediatrics insulin has been given intravenously with glucose to relieve malnutrition, acidosis, recurrent vomiting, and acute intestinal intoxication. (1) In surgery insulin and glucose have been used frequently both in the preoperative care of patients and in the treatment of postoperative acidosis. Insulin has also been used in the treatment of refractory cases of malnutrition in adults. Short (2) reports a series of six cases of malnutrition in which three units of insulin were given hypodermically fifteen minutes before meals. The dose was later increased to five units. Case No. 1 gained nineteen pounds in six weeks; case No. 2, six pounds in one month; case No. 3, four pounds in one month; case No. 4, nine pounds in two months; case No. 5, did not gain; case No. 6, gained fifteen pounds in two and a half months. In these cases insulin produced an increase in appetite, with a consequent larger intake of food.

In some cases of chronic pulmonary tuberculosis, the disease is apparently stationary but the patients fail to gain weight in spite of rest, high caloric diet, and carefully supervised treatment. One of the most annoying symptoms in these cases is a lack of appetite or in some instances a distaste for food. It seems reasonable to expect such patients to respond favorably to insulin

therapy. In Germany and France insulin has been employed in the treatment of nondiabetic tuberculous patients. Dr. E. G. Hubin, of the Pokegama Sanatorium kindly assisted in the translation of the German articles discussed in this paper.

Morin and Bouessée (3), in 1927, reported the results of the use of insulin in eight cases. They gave five to fifteen units of insulin hypodermically, twice a day, thirty minutes before meals. Three patients showed a steady and gradual gain in weight which continued after insulin was stopped. Two gained weight during the period in which insulin was used but showed no gain after it was discontinued. One gained very little. One gained 1.3 kilograms while using insulin but lost weight when it was discontinued. Another, a far advanced case, felt better during the period of insulin therapy but failed to gain. The authors did not see the slightest thermic reaction or pulmonary aggravation in severe but afebrile cases during the use of insulin. Their greatest results were obtained in afebrile stabilized cases in which the gain continued after the insulin was stopped.

Combemale, Gernez, and Breton (4) observed the action of insulin in thirty-two cases, for the most part afebrile. The course of treatment lasted from fourteen to twenty-five days, and in some cases was repeated after a month's interval. Fifteen to sixty units of insulin were injected

*Read before the Pine-Chisago County Medical Society, December 16, 1930, and at the Trudeau Medical Society, February 21, 1931.

hypodermically fifteen minutes before the principal meals. Thirty units sometimes gave results where none were obtained from fifteen units. Sixty units were poorly tolerated. Three grams of sugar were added to the diet for each unit of insulin. Following a single course of treatment twenty-five of thirty-two patients showed weight gain. One gained over two kilograms, thirteen gained between one and two kilograms, and eleven gained less than one kilogram. Of the twenty-five cases showing weight gain, eight continued to gain after insulin was stopped, six maintained their weight, five maintained it partially, and six fell back to former weight. In the second course of treatment of twenty-one cases, fifteen showed increase in weight. The best results were obtained with the use of thirty units of insulin. Seven patients developed urticaria following the resumption of treatment. One case developed hemoptysis, hematuria, epistaxis, with extension of pulmonary disease and death after a few months. Transitory elevations of temperature and sputum tinged with blood were frequently seen. Seven cases showed reactivation of pulmonary disease.

Grossfeld (5), in 1927, employed insulin in the treatment of twelve patients with mildly active, fibroid or stationary tuberculosis. He used insulin "Wellcome" five to thirty units daily. The effect on appetite was satisfactory and the average weight gain was approximately five kilograms. The author observed no severe reactions. Mild hypoglycemic reactions relieved by the ingestion of carbohydrates occurred occasionally. He advises against the use of insulin in highly febrile or advanced cases. He also believes that small doses should be employed, as tuberculous patients may be insulin sensitive.

Lang (6) reports a satisfactory weight gain in eighty per cent of the cases treated with ten units of insulin hypodermically thirty minutes before supper twice weekly. The appetite was markedly increased. The author ascribes the improvement of the patients mainly to the psychic effect, and stresses the importance of using a high caloric diet in addition to the insulin. He observed occasional hypoglycemic reactions. Schlapper and Kirchner (7) found the fasting blood sugar level of tuberculous patients to be within normal limits. With the use of insulin or synthalin there was a definite drop in blood sugar level with an increase in appetite. Light, afebrile, inactive or only moderately active cases showed a considerable weight gain. In definitely active cases there was an increase in appetite but not much gain in weight. In far advanced cases there was no change. There were no untoward effects observed with

insulin. The dosage consisted of ten to fifteen units hypodermically, three times a day, thirty minutes before meals.

Schönfeld (8) studied sixteen cases which he arranged in two groups. The first group consisted of four mild fibrotic cases without cavitation. The second group included twelve cases with cavitation. All the patients in the first group gained; the amounts gained ranged from 1.1 to 2.6 kilograms. All except two patients in the second group gained in weight. One showed a slight insulin reaction. Two developed focal reactions with increased temperature. One had a delayed insulin reaction requiring nourishment during the night. Another developed areas of infiltration at the site of injection. The dose in this series varied from five to fifteen Klinische units, the equivalent of from two to eight Toronto units. Where small doses failed larger doses were ineffective also.

Zelter (9) in a series of twenty-four cases found an increase in weight in nineteen. The average gain was 0.66 kilogram. There was no change in two cases and a retardation of gain in three. He observed no focal or general reactions. The appetite was improved in all but two cases. No severely ill or febrile cases were included in this series.

In October, 1929, insulin was first used at the Pokegama Sanatorium in the treatment of non-diabetic tuberculous patients. Dr. H. Longstreet Taylor suggested that the treatment be given. At the start five units of insulin were given hypodermically one hour before meals. In all except one case, preliminary fasting blood sugar values were determined. These values ranged from 62 mgs. to 122 mgs. per 100 cc. of blood. In the majority of the cases blood sugar values were also determined one hour after the insulin was injected. The change in blood sugar levels was of assistance in determining the dose of insulin required. Close clinical observation of the patient was practically as accurate a guide in determining the dose as was the fall in blood sugar. The urine was examined before, after, and during treatment, special attention being paid to the presence of sugar. Four patients who showed persistent glycosuria did not respond well to insulin therapy. The patients were observed carefully for signs of hypoglycemic reactions. Two showed definite reactions with tremor of the hands, slight sweating, and sensations of weakness and hunger. No reactions severe enough to cause marked discomfort occurred. Those reactions which did occur were quickly relieved by eating carbohydrates.

TABLE I

Patient	Diagnosis	Before Insulin		Insulin			During Insulin Therapy			Other Treatment	Remarks
		Appetite	Wght. Change	Dosage	Start	Stop	Appetite	Wght. Change	Urine		
Miss E. D.	Pulm. Tbc. Mod. Adv. A. Apparently arrested.	Poor	No gain for years.	U 3 tid. ½ hr. a. c. U 5 tid. U 8 tid. U 10 tid.	6/10/30 6/13/30 6/17/30 6/25/30	9/16/30	Fair	3½ lbs. gain in 3 months.	sugar + 5/18/30 sugar O all other examinations.	Ambulant.	Pt. had occasional delayed hypoglycemic reactions coming on about 1 hour after meals, relieved by eating carbohydrates.
Mrs. A. S.*	Pulm. Tbc. Far Adv. C. Tbc. Enteritis	Poor	10 lbs. loss in 4 months.	U 5 tid. 1 hr. a. c.	12/19/29	6/21/30	Good	11½ lbs. gain in 6 months.	sugar O	Pneumothorax started 10/8/29 successful. Bed rest. Alpine light. Colitis diet.	Gain after insulin was discontinued. 6½ lbs. in 6 weeks. Diagnosis on discharge Pulm. Tbc. Far Adv. A.
Mrs. E. R.*	Pulm. Tbc. Far Adv. C. Tbc. Enteritis?	Poor	4 lbs. gain in 4 months.	U 5 tid. 1 hr. a. c. U 5 tid. 1 hr. a. c.	10/25/29 5/6/30	1/6/30 6/21/30	Good	11½ lbs. gain in 2½ mos., first period. 4½ lbs. gain in 6 weeks, second period.	sugar O	Bed rest. Alpine lamp. Heliotherapy. Colitis diet. Phrenic-exeresis 4/17/30	Pt. has continued to gain at home since insulin was discontinued. At present is limiting caloric intake for fear of growing too fat.
Mr. A. S.*	Acute Tbc. Peritonitis	Poor	16 lbs. loss in 17 weeks.	U 5 tid. 1 hr. a. c.	4/18/30	5/11/30	Fair	5 lbs. gain in 3 weeks.	sugar O	Fluid aspirated from abdomen and replaced with oxygen 3/3/30. Alpine lamp. Bed rest.	Pt. gained 8 lbs. in 2 weeks after insulin was discontinued.
Dr. E. H.*	Pulm. Tbc. Incipient B.	Poor	7 lbs. gain in 4 weeks.	U 8 bid. 1 hr. a. c.	8/30/30	9/20/30	Fair	9½ lbs. gain in 3 weeks.	sugar O		Pt. gained 4 lbs. after insulin was discontinued.
Mrs. M. D.	Pulm. Tbc. Far Adv. B.	Poor with feeling of fullness and distress after eating.	3 lbs. gain in 4 weeks.	U 5 tid. 1 hr. a. c. U 5 tid. 1 hr. a. c.	10/4/30 11/30/30	11/18/30 12/13/30	Impr'd. No distress after eating.	5 lbs. gain in 5 weeks, first period. 1 lb. gain in 2 weeks, second period.	sugar O	Bed rest. Pneumothorax attempted 11/5/30 unsuccessful. Phrenic-exeresis 11/28/30 successful	Pt. has since had an upper stage thoracoplasty, is still on insulin.
Mr. D. W.	Pulm. Tbc. Mod. Adv. B.	Fair with distress and fullness after eating.	1 lb. loss in 7 weeks.	U 5 tid. 1 hr. a. c.	10/8/30	11/2/30	Same, but no distress after eating.	5¾ lbs. gain in 3 weeks followed by 2¾ lbs. loss in 4th week, when pt. had a gastro-intestinal upset with rise in fever.	sugar O	Pt. an old pneumothorax case with pneumothorax recently discontinued. Phrenic-exeresis 8/8/30. Upper stage thoracoplasty 11/3/30.	Insulin has not been given since thoracoplasty. At time of discharge pt. had negative sputum. General condition improved.
Mr. R. E.	Pulm. Tbc. Far Adv. C.	Poor with distress and fullness after eating.	5 lbs. loss in 5 months.	U 5 tid. 1 hr. a. c.	3/11/30	3/26/30	Fair. Distress after eating not changed.	2 lbs. gain in 2 weeks.	sugar O	Bed rest. Pneumothorax 5/1/29 successful.	Pt. was hemorrhaging severely at time of admission, was ambulant at time of discharge.
Mr. W. O'B.	Pulm. Tbc. Far Adv. C.	Poor with marked distress after eating.	20 lbs. loss in 3½ months.	U 5 tid. 1 hr. a. c.	4/18/30	5/14/30	Poor. No change.	5 lbs. gain in 4 weeks.	sugar O	Successful pneumothorax 2/3/30. Phrenic-exeresis 4/2/30. Bed rest.	Pt. complained of frequent headaches during periods of treatment. Insulin was discontinued at his request.
Mrs. F. O.	Pulm. Tbc. Incipient B.	Fair	4¾ lbs. loss in 4 months.	U 5 tid. 1 hr. a. c.	11/12/30	12/6/30	Good	2 lbs. gain in 3 weeks.	sugar O	Bed rest.	
Miss F. O.	Pulm. Tbc. Far Adv. B. Tbc. Empyema	Poor	2½ lbs. loss in 2 months.	U 5 tid. 1 hr. a. c. U 10 tid. 1 hr. a. c. U 5 tid. 1 hr. a. c.	3/3/30 3/7/30 3/17/30 3/17/30	3/7/30 3/17/30 3/28/30	Slightly improved	2½ lbs. gain in 4 weeks.	sugar O sugar O	Successful pneumothorax 10/13/29	Pt. developed an urticaria 3/26/30. Was sensitive to insulin and orange juice. After insulin was discontinued, pt. gained 26½ lbs.
Mr. F. C.	Pulm. Tbc. Far Adv. B. Tbc. Enteritis	Poor. Much cramping and distress after eating.	No change in 7 weeks.	U 5 tid. 1 hr. a. c. U 8 tid. 1 hr. a. c.	6/5/30 7/13/30	7/13/30 8/7/30	Fair. Marked distress with cramping and diarrhea after eating.	1½ lbs. gain in 8 weeks.	sugar + 3 times out of 9 examinations.	Bed rest. Alpine lamp. Cod liver oil. Tomato juice. Paregoric. Bismuth subcarbonate.	Slight fall in blood sugar value after insulin injection.

* See Graph.

TABLE I—Continued

Patient	Diagnosis	Before Insulin		Insulin			During Insulin Therapy			Other Treatment	Remarks
		Appetite	Wght. Change	Dosage	Start	Stop	Appetite	Wght. Change	Urine		
Mrs. E. W.	Carcinoma of the breast with pulmonary metastases	Poor with fullness and distress after eating.	80 lbs. loss in one year.	U 3 tid. ½ hr. a. c. U 5 tid. ½ hr. a. c. U 10 tid. ½ hr. a. c. U 5 tid. ½ hr. a. c. U 8 tid. ½ hr. a. c. U 5 bid. ¼ hr. a. c.	7/23/30 7/24/30 7/26/30 8/14/30 8/15/30 8/15/30 8/28/30 10/8/30	7/24/30 7/26/30 8/14/30 8/15/30 8/28/30 11/8/30	Poor. Fullness after eating less marked.	No Change. 3 lbs. lost and regained in 5 weeks of first period.	sugar + 4 times out of 8 examinations.	Bed rest. Thymic extract 1 cc. by hypo. once a day.	Pt. had slight decrease in blood sugar value after insulin. Had repeated hypoglycemic react's with norm'l blood sugar values. Reaction relieved by eating carbohydrates.
		Poor	1½ lbs. gain in 7 weeks at home.					No change			

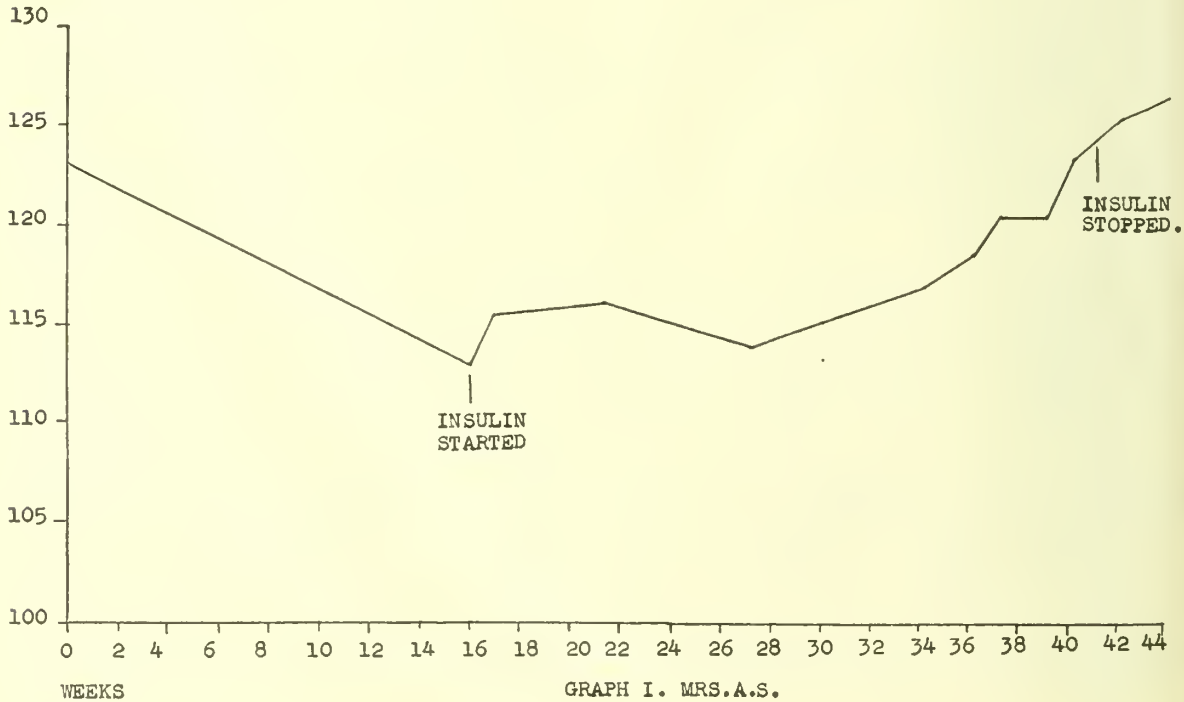
A summary of thirteen cases is given in Table 1. Twelve of the thirteen patients showed definite weight gains varying from one and a half to eighteen pounds. One patient neither gained nor lost. The relationship between the period of insulin therapy and the gain in weight in four of the more striking cases is shown in Graphs I, II, III, IV.

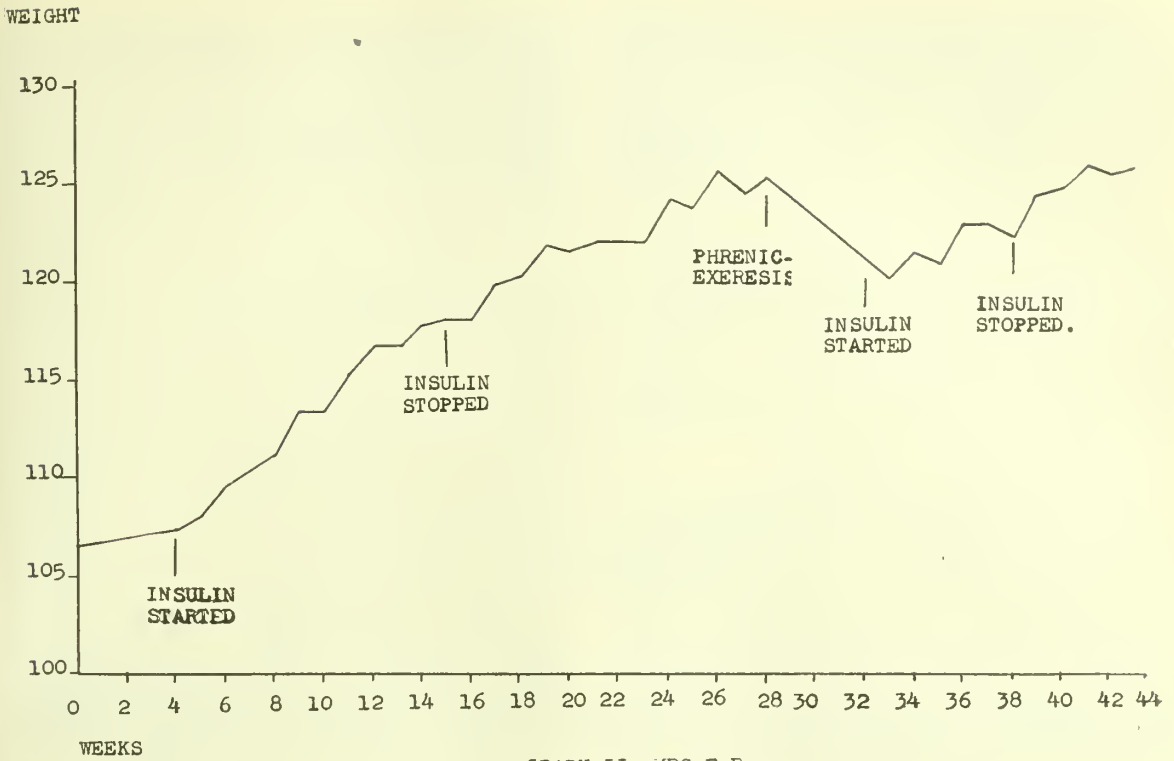
E. W., a patient with an inoperable carcinoma of the breast with pulmonary metastases, showed no permanent weight gain. During a period of twelve months before insulin therapy was started she had lost eighty pounds in weight. Her fasting blood sugar value varied from 97 mgs. to 125 mgs. One hour after the injection of ten units of insulin her blood sugar value was 97 mgs. One

specimen taken fifteen minutes after the injection of ten units of insulin showed a rise from 97 mgs. to 133 mgs. In spite of the small apparent effect of insulin this patient had occasional delayed hypoglycemic reactions. During one reaction the blood sugar value was determined and found to be 92.6 mgs. This patient also showed an occasional glycosuria.

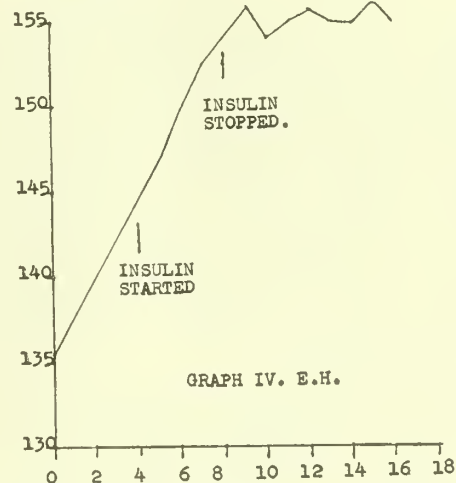
F. C., a patient with a far advanced pulmonary tuberculosis, tuberculous enteritis, and possible tuberculous peritonitis gained only one and a half pounds in eight weeks. He showed a very slight fall in blood sugar value one hour after insulin injection. At one time there was a decrease of only 6 mgs. one hour after the injection of five units of insulin, at another time a fall of only

WEIGHT





GRAPH II MRS. E.R.



3 mgs. under similar conditions. He occasionally showed sugar in his urine both during the period of treatment and after it was discontinued. His gastro-intestinal symptoms were severe and may partially account for his failure to gain.

E. D., a patient with an apparently arrested pulmonary tuberculosis, gained weight very slowly but continuously. She had an occasional glycosuria.

W. O'B., with a far advanced pulmonary tuberculosis gained weight while using insulin. He was subject to migraine headaches and felt that

they were more severe during the period of treatment. He showed a questionable reaction to a cutaneous test with insulin. Insulin therapy was discontinued at his request. His headaches seemed as frequent after insulin was discontinued as they had been during the period of treatment.

F. O., a patient with a far advanced pulmonary tuberculosis, developed an urticaria during the period of treatment. She reacted positively to cutaneous tests for insulin and orange juice. Both were discontinued. The patient's appetite continued to be good, so insulin therapy was not resumed.

Dinner and Dohrn (10) found that the albumen content of different samples of insulin varied from 2.73 mgs. to 9.88 mgs. per one hundred units. It seems certain that in some cases foreign protein reactions may be obtained from large doses of insulin. Hajek (11) reports a case of diabetes in which about eight hours after insulin was given, an urticarial wheal developed at the site of injection. Insulin Lilly, Insulin Stearns, and Insulin Squibbs, which are made from pancreas of sheep, hog, beef, and possibly other animals gave the reaction. Insulin Lilly "special" which is made only from beef pancreas gave no reaction. In our series of cases no local reactions were seen and the general reactions noted in cases of F. O. and W. O'B. were doubtful.

In addition to the cases outlined above, insulin was given to seven extremely ill patients who asked that they might have it. The treatment in these cases was continued over varying periods of time, in some cases for only a few days, in others for weeks. Five showed temporary improvement in appetite. All were too ill to be weighed. In none was there any permanent improvement. None showed any unfavorable febrile or general reactions. W. B. and J. S. showed no improvement in appetite. W. B.'s blood sugar level fell only 8 mgs. in one hour following the injection of five units of insulin, and only 36 mgs. in one hour following the injection of ten units of insulin. W. B. showed a persistent glycosuria (one to three grams in twenty-four hours) during the week in which insulin was given. He showed no other glycosuria either before or after the period of treatment. J. S. showed a very slight drop in blood sugar, only 10 mgs. in an hour following the injection of ten units of insulin. He showed no glycosuria. Both W. B. and J. S. had extensive tuberculous enteritis.

In a small series of experiments with apparently normal individuals, very different reactions were obtained in different subjects after the same dose of insulin (Graph V). Not only the extent of the drop but also the period of reaction varied with the individual. The type of reaction seemed to be constant for the same individual as shown by the two curves for E. L. Three subjects, E. W., E. L., and A. E. showed slight increases in blood sugar fifteen minutes after insulin injection. The appearance of a transitory hyperglycemia following insulin injection has been the subject for much experimental work in Europe. Rathery, Kowilsky, and Laurent (12), who observed the appearance of a transitory hyperglycemia in dogs, state that the phenomenon occurs after both the intravenous and subcutaneous in-

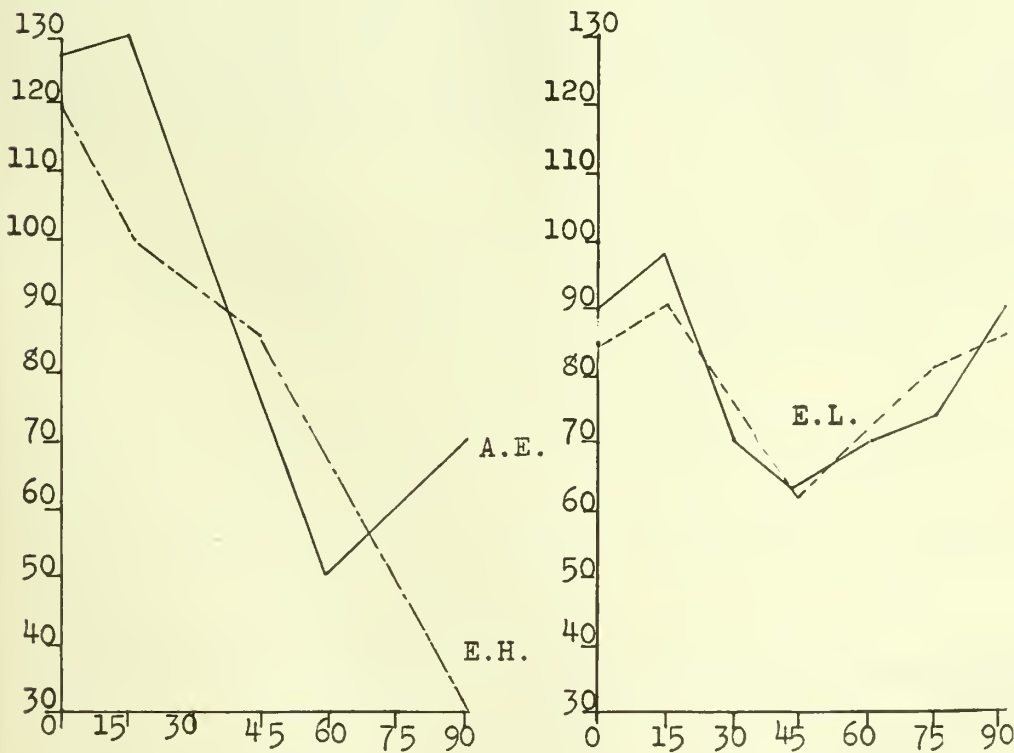
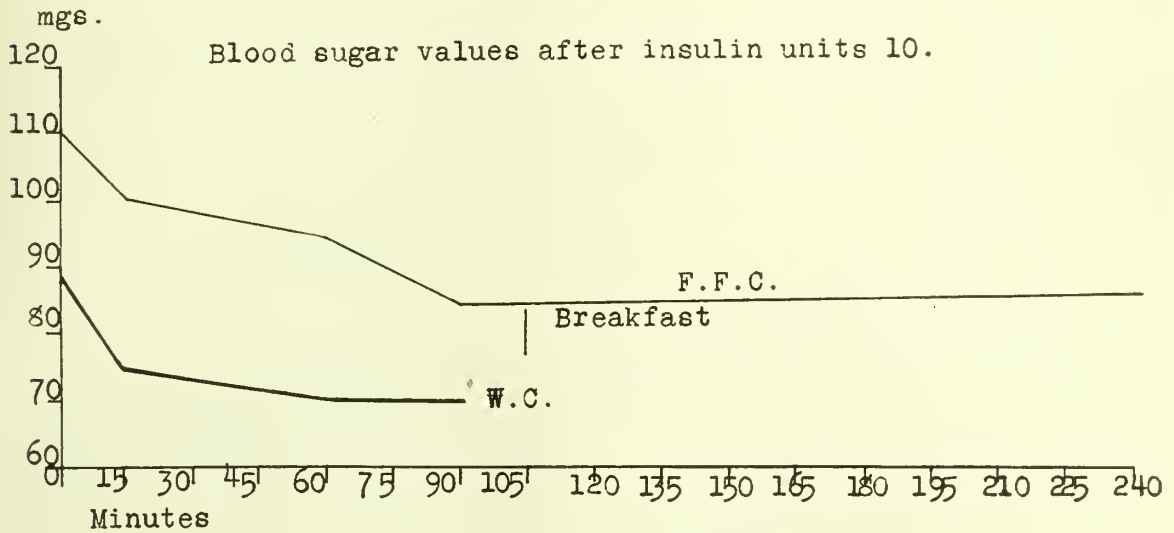
jection of insulin, but is delayed when the subcutaneous route is used. The increase in blood sugar is most marked in the hepatic circulation. Jonesco, Comulesco, and Tonesco (13), found that the initial hyperglycemia occurred twenty to thirty minutes after the injection of insulin. They suggest a glycogenolytic action of insulin followed by a discharge of sugar into the blood. Bürger (14), in experimental work with dogs, and in clinical observation of his patients, found that primary insulin hyperglycemia appeared to be dependent upon an intact liver parenchyma, and upon whether or not the glycogen depots were filled. In a further series of experiments Bürger (15) showed that following insulin injection the glycogen content of the liver was reduced, and that the reduction was proportional to the rise in blood sugar. If the blood stream was cut off from circulating through the liver the initial hyperglycemia did not occur.

In E. H., F. C., and W. C., the fall in blood sugar values was continuous, though the rate varied in each case. The occurrence of hyperglycemic reactions also varied with the individual. F. C. had a moderately severe reaction with a blood sugar value of 85 mgs. Wm. C. had a less severe reaction with a blood sugar value of 70 mgs., and E. L. a slight reaction with a blood sugar value of 62 mgs. Both E. H. and A. E. had moderately severe reactions with tremor, dizziness, and hunger when their blood sugars fell to between 50 and 40 mgs. E. L., in another experiment experienced a no more severe reaction with a blood sugar of 43 mgs. than that which had occurred with a blood sugar of 62 mgs. Buschke (16), believes that the appearance of an insulin reaction is due more to a lowering of blood sugar plus tissue sugar than to a fall in blood sugar alone. It is vasomotor in part and may occur clinically in the presence of a normal or greater than normal blood sugar value.

Of the thirteen cases reviewed in Table 1, eight were patients with far advanced disease. Two of these patients showed definite gain in weight and improvement in general symptoms both during and after the period of insulin therapy. The remaining six patients showed temporary improvement in appetite and gain in weight. We did not give "courses" of treatment with insulin. Treatment was continued until the patients showed definite improvement, or in those cases which failed to improve, until we felt it had been given a fair trial. The doses we used were small, varying from three to five units three times a day in most cases, with an occasional case taking seven to ten units three times a day. We observed no

untoward reactions in febrile cases. Treatment was continued during menstruation with no bad effects. We saw no cases in which the use of insulin caused an aggravation of the pulmonary lesion. We considered the appearance of a persistent glycosuria as a warning. In our small

series, the four patients showing glycosuria did not gain as rapidly or as much as those not showing glycosuria. In extremely ill, far advanced cases insulin was used as a palliative measure, giving partial relief from anorexia and from distress after eating.



Graph V

We found great individual differences in the reactions of patients to insulin. One patient had a drop in blood sugar value of 30 mgs. following the injection of three units of insulin. If the initial dose is small and if the patient is under close clinical observation, we feel that blood sugar determinations are not necessary. The optimum dose of insulin, that which gives a sensation of hunger unaccompanied by disagreeable symptoms may be determined by gradually increasing the dose. The time of reaction varies in different patients and must be determined for each. If the reaction occurs before the meal the interval between the meal and the injection of insulin should be reduced, if after the meal the interval should be increased.

CONCLUSIONS

1. Insulin is of value in the treatment of anorexia in nondiabetic, tuberculous patients.
2. Small doses of insulin should be used and should be increased gradually.
3. Close clinical observation of the patient is a sufficient guide in determining the dose and the time interval required.
4. While afebrile patients with incipient or moderately advanced fibroid tuberculosis respond most quickly to treatment, definite beneficial results were obtained even in far advanced cases.
5. No cases were observed in which insulin therapy produced an increase in fever or an aggravation of the pulmonary disease.

6. The appearance of glycosuria during the course of treatment calls for a careful examination of the patient with blood sugar determinations.

7. We believe that insulin can also be used safely by the general practitioner in the treatment of anorexia occurring in chronic debilitating diseases.

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DISEASES OF THE HEART AND LUNGS IN CHILDHOOD*

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In this brief general consideration of diseases of the heart and lungs in childhood a discussion of many conditions must be omitted necessarily. An attempt is made therefore, to review and emphasize only certain points which possibly are of rather general interest and of practical value.

HEART

Although heart disease is the leading cause of death in the United States Registration Area, the greatest number of deaths from this cause occur after late middle life. If congenital conditions are excluded we find that fatal heart disease in children is usually rheumatic in origin. The number of children suffering from this condition

constitutes a fairly large proportion of the patients visiting dispensaries and charity hospitals, but forms only a relatively small per cent of the children seen in private practice. The striking rarity of rheumatic heart disease among private patients as compared with its common occurrence among clinic patients, indicates that environmental variations associated with differences in social status may be factors of etiological importance. Which specific factors are of greatest importance is uncertain, but it appears that the frequency of rheumatism in children may be reduced by raising standards of living, improving home conditions, avoiding exposure to cold, reducing crowding, etc.

*From an extension short course lecture given at Olivia, Minnesota, May 11, 1931.

The etiology of rheumatic fever has been the subject of investigation for years, and considerable evidence has been presented identifying the streptococcus viridans as the etiologic agent. Infection by this organism somewhat resembles tuberculous infection, in that a state of allergy to the streptococcus develops following an attack of rheumatic fever.

The pathological changes resulting from rheumatic fever are widespread throughout the body. It is true, however, that the permanent lesions of the heart valves and of the myocardium are rather liable to overshadow those of other organs and tissues of the body in clinical importance. It is not intended to enter into a detailed consideration of these pathological changes in this paper, but rather to touch briefly on certain points relating to the diagnosis and therapy of certain cardiac complications.

Mitral insufficiency or regurgitation is the most common acquired rheumatic heart lesion found in childhood. It is usually due to the weakened myocardium permitting stretching of the mitral ring and thus permitting blood to regurgitate into the left auricle. The resultant systolic apical murmur, the accentuation of the second pulmonic sound, and the cardiac enlargement is familiar to all. Also, the variability of these findings dependent upon the severity of the lesion is generally known. The pulse usually is normal and the blood pressure is not appreciably altered. Mitral stenosis generally affects the size of the left auricle, particularly since the extra work is thrown on the auricle rather than on the ventricle. The typical murmur is late diastolic, ordinarily called presystolic, resembling that of aortic regurgitation. Double mitral lesions frequently develop following increasing valvular damage; thus the insufficiency which at first was due mainly to stretching of the mitral ring, finally results in true valvular incompetence and stenosis combined. Here the heart may become greatly enlarged, and the murmurs of regurgitation and stenosis may be heard.

Tricuspid insufficiency usually develops as a terminal condition associated with a failing myocardium superimposed upon serious disease of the mitral valve. The heart action is poor, and as it weakens, evidence of congestive failure increases. The neck veins show true expansile pulsation, and the liver becomes enlarged, tender, and pulsating. The heart is greatly enlarged, dilated both to the left and to the right, presents a variety of murmurs, and the sounds are poor or are obscured by the murmurs.

Aortic insufficiency may develop as a part of rheumatic heart disease in children. The mur-

mur is heard throughout diastole along the left sternal margin from the third to the fifth spaces. When marked, capillary pulsation may be demonstrable, and the pistol shot sound may be heard in the larger arteries. The pulse pressure is high, due to the diastolic pressure being very low, and often it is impossible to feel the pulse at the wrist when the arm is held vertically above the head.

The six foot X-ray plate of the heart is of value in the study of the actual size of the heart. In determining the measurements of this organ on the teleroentgenogram, a straight line is first drawn down the center of the figure. At the levels where the left and right sides of the heart are widest respectively, longitudinal lines are drawn from the central vertical line. The sum of the length of these two horizontal lines is the greatest transverse diameter of the heart, which normally equals from 35 to 50 per cent of the maximum transverse width of the pulmonary field. Normally one-fourth to one-third of the heart lies to the right of the central vertical line mentioned above. By these measurements in mitral insufficiency an enlargement of the heart may be demonstrated that otherwise might be overlooked. In mitral disease in general the esophagogram is of special value. When barium is introduced and lateral plates are made during inspiration the esophagus is found to run fairly straight through the thorax lying in close contact with the posterior wall of the heart, maintaining a distinct and rather uniform space between itself and the anterior margin of the bodies of the thoracic vertebræ. In mitral disease the enlargement of the left auricle causes a posterior displacement of that portion of the esophagus with which it is in contact. This finding is very valuable in making a diagnosis of mitral disease, and without definite evidence of dilation of the left auricle, one may be skeptical as to the presence of mitral disease. When the left auricle is greatly enlarged the esophagus also may be displaced appreciably to the right.

Posterior anterior roentgenograms of the esophagus are also of value in detecting the condition of the aortic arch, in that the left margin of the esophagus marks the right border of the aortic arch. Normally the measurement of the transverse diameter of the arch made from the left border of the esophagus to the left border of the arch is found to vary from 2.0 to 3.5 cm. By this method the ascending portion of the aorta is not included; enlargements of this portion, however, do not affect the esophagus appreciably. Evidence of enlargement of the aortic arch is determined by the actual increase above normal

in the transverse diameter, by the marked increase in the indentation which is normally present in the left border of the esophagus at this level, and by the distinct displacement of this segment of the esophagus to the right and posteriorly. Furthermore, tortuosity and lengthening of the descending aorta may be demonstrated by distortion of the esophagus which accompanies the aorta in its thoracic portion.

Congenital heart conditions usually do not cause displacement of the esophagus, and in such cases a normal esophagogram indicates that the cardiac enlargement is limited to the right side of the heart.

PROGNOSIS

The prognosis is not necessarily serious if only one valve is involved; thus, with aortic insufficiency alone, or with a slight mitral insufficiency the children may do well. With signs of stenosis of these valves the outlook is less favorable. Children having double mitral lesions are apt to do badly as time elapses, and the prognosis is still more grave when aortic and mitral disease exist together. The advent of tricuspid insufficiency is one of the most serious of heart conditions, and often indicates that irreparable damage has been done. Prognosis in a measure is roughly proportional to the severity of symptoms, the prominence of evidence of circulatory embarrassment, the degree of cardiac hypertrophy and dilation, and a history of acute decompensation and recurrent attacks of arthritis and carditis. The ability of the child to make a remarkable recovery, however, in spite of evidence of serious damage to the heart must not be forgotten in making a prognosis.

TREATMENT

In the light of our present knowledge the prophylactic treatment of these cases requires removal of all foci of infection, although one must admit, for instance, that the wholesale removal of tonsils in such cases has not proved to be a strikingly effective prophylactic measure. The value of attempts to desensitize these patients to the streptococci to which they are allergic, while promising, is still problematical.

Salicylates are of value in controlling the symptoms and pyrexia of rheumatic fever complicating heart disease, and thus may indirectly benefit the latter condition.

The essential and most important factor in the treatment of rheumatic heart disease, when first discovered, is rest. The value of rest cannot be over emphasized, and it occupies as important a place in the therapy of this condition as it does in the treatment of tuberculosis. Children having acute, rheumatic heart disease should be con-

fined to bed not for weeks but for months. It is advisable to prolong this rest cure over many weeks past the time when the leucocyte count, rectal temperature, and pulse rate return to normal. By months of rest, remarkable recoveries may occur. Dr. Morse, of Boston, recently reported before the American Pediatric Society a series of cases of rheumatic heart disease seen some twenty-five years ago in which he employed prolonged periods of months and months of rest, and in many instances these patients so completely recovered from severe acute cardiac infections as to enable them to lead normal adult lives. In certain instances the recovery was so complete, that in adult life no cardiac pathology was demonstrable. To determine the time when bed rest may be terminated is exceedingly difficult, but in general probably the safest plan is to keep the child in bed three to six months after it seems safe to relax in the care of the patient.

Subsequent convalescent care should include very cautious and gradual permission to increase activities. If possible these cases should be placed in convalescent homes or hospitals, where the general atmosphere of conservation of energy and limitation of activity prevails, and where the temptations to overdo are not present.

Drug therapy has its place in the treatment of the more advanced cases showing evidence of decompensation and auricular fibrillation. The digitalis preparation to use is of importance and should be known to be active and of uniform potency. For rapid digitalization by the Eggleston method give 0.145 c.c. of the tincture per pound, giving one half the total dose immediately, and the remainder during the following twenty-four hours.

Other measures to be employed therapeutically in emergencies will not be enumerated, but again I wish to emphasize that in the initial stages of rheumatic heart disease the treatment of the child by means of prolonged rest outweighs the value of specific drug therapy of the heart itself.

FOREIGN BODIES

The aspiration of foreign bodies into the bronchial tree is a fairly common occurrence, and requires prompt attention if serious consequences are to be prevented.

The history of the events presented at the time the accident occurred is of great importance, and reveals a period of severe strangling, respiratory difficulty, cyanosis, dyspnea, and distress, coinciding with the time the foreign body first entered the larynx and trachea. For a period thereafter symptoms may be inconspicuous aside from a persistent irritative cough, particularly if the foreign body is not large and is not composed

of highly irritating substances. The physical signs are varied, depending on whether the foreign body causes either a collapse or an emphysema of the lung peripheral to the position of the obstructing object. The presence of a wheeze, audible at the mouth following gagging is rather strong evidence of the presence of a foreign body within the bronchus.

Every child should have an X-ray plate taken if there is any reason to suspect aspiration of a foreign body, which, if opaque may be readily identified and located. A diagnosis also is usually possible by X-ray in instances where the foreign body cannot be demonstrated. In such cases we find either a drowned and collapsed lung peripheral to the site of the bronchial obstruction, or a marked emphysema in this area due to the ball valve effect of the obstruction in permitting air to pass the foreign body on inspiration and in preventing its escape during expiration.

The treatment involves prompt removal of the foreign body by means of the bronchoscope. Occasionally a foreign body may be expelled spontaneously by coughing, particularly if the child is held in a vertical position with the head directed downward.

LUNGS

Pneumonia is a disease occurring frequently in children, with bronchopneumonia constituting the predominating type found during the first few years of life. According to the findings from the study in 1924 by the Chicago pneumonia commission, the relative death rate in children under five years of age was over three times as large from bronchopneumonia as from lobar pneumonia. The irregularity of the temperature and the general symptoms characteristic of bronchopneumonia are well known to the medical profession. Physicians also are familiar with the gravity of the condition especially when occurring in young infants, in debilitated children, and in individuals suffering from some other serious ailments. The mortality, however, is generally higher among institutional than among private cases.

The treatment requires attention to details such as providing moist warm air at a temperature of 70° F. Special care should be exercised in bathing, feeding, keeping the mouth clean, frequently changing the child's position, and in all other procedures which add to the patient's comfort. Equally essential is the exercise of judgment in not over treating the child. Counter irritation, steam inhalations, hydrotherapy, mustard baths and packs, oxygen inhalations and medicinal therapy are measures which are commonly employed. Sedatives have special indications in

relieving cough and permitting periods of rest, and from this standpoint are extremely valuable. The administration of digitalis is advocated by many, and in collapse various stimulants as adrenalin, caffeine, metrazal, alphalobeline, etc., are used.

Lobar pneumonia in childhood most commonly results from the type IV group of pneumococci, the group which causes the lowest mortality. Any portion of the lung may be involved, but there is a predilection for its localization either in the right upper, or left lower lobe. The clinical types of the disease vary somewhat, thus we see cases of very short duration of 48 hours or less, and prolonged migratory examples of lobar pneumonia.

Discussion of the clinical features of the usual and the special types of lobar pneumonia, and of the frequency with which the condition may simulate appendicitis is probably unnecessary. Attention is called merely to the recent demonstration by Dr. Ude, of Minneapolis, that lateral X-ray plates of many so-called cases of central pneumonia reveal that such consolidations often are not centrally located, but are developing in the peripheral portion of the lungs.

The treatment of lobar pneumonia should minimize all unessentials without sacrificing procedures of value. Comfort, and rest which requires exclusion of visitors are of paramount importance. Most patients can be cared for in the home in a well ventilated room kept around 60° to 65° F. The use of cold air has its advocates and critics, but probably is of value when not overdone in the care of patients having an excessively high temperature.

Oxygen inhalations are of value in certain cases in lowering the respiratory rate, slowing the pulse, and relieving cyanosis, thus alleviating these fatiguing factors. The use of specific serum therapy is limited, due to the fact that most pneumonias in children are due to type IV organism for which we have no immune serum.

Empyema frequently develops as a complication of pneumonia, particularly of the lobar type, and is responsible for many of the deaths following lobar pneumonia. The condition is associated with the high mortality of 74 per cent, according to Holt, in the first year of life, decreasing thereafter as age progresses. The treatment involves aspiration of the pleural exudate, and Brenne-man particularly has been remarkably successful with this method. The introduction of air into the pleural cavity in amounts sufficient to replace the material aspirated permits a more complete drainage of the cavity than is otherwise possible, and for this and other reasons is looked upon as

a meritorious procedure. When aspiration fails to relieve the condition operative procedures must be resorted to, and attention is called to the fact that the closed method has many advocates.

TUBERCULOSIS

As in adults also in children lesions of tuberculosis are commonly found within the thorax. The clinical features of pulmonary tuberculosis in children resulting from the first infection, are strikingly different from those characteristic of the adult type of tuberculosis which results from reinfection.

When fairly massive the first infection of the lungs of infants and children produces a parenchymal consolidation which on the X-ray film may closely resemble a lobar pneumonia. This primary tuberculous condition differs from pneumonia and also from consumption in that it causes only a slight fever, persists for months, during which period the child is not toxic but seems in perfect health, causes little alteration in respiration, and in general runs a comparatively benign course, provided the child is given a reasonable chance to recover through protection from reinfection. In time the parenchymal lesion slowly resolves and may either disappear completely, or leave a small calcified Ghon tubercle which is inconspicuous as compared with the initial lesion from which it was derived. Later, calcium deposits appear in the regional hilus lymph nodes. Childhood pulmonary tuberculosis of first infection may be divided into four stages or types with regard to the X-ray evidence of the disease, as follows:

1. Childhood tuberculosis without demonstrable lesion.
2. Childhood tuberculosis with resolving parenchymal lesions (earliest stage of disease).
3. Childhood tuberculosis with lesion limited to calcification of intrathoracic lymph nodes (late stage of the disease).
4. Childhood tuberculosis with Ghon tubercles and calcified glands (late stage of the disease).

While these various types of the disease differ from the standpoint of the X-ray, collectively they constitute the clinical entity of childhood tuberculosis, or pulmonary tuberculosis of first infection, and are all similar in that every case of this type of the disease is allergic to tuberculin, and thus apt to develop the adult type of tuberculosis if reinfected.

Childhood tuberculosis usually tends to resolve and become quiescent. The natural resistance with which we are endowed at birth to combat the disease proves remarkably efficient in controlling even serious initial infection by the tubercle bacillus, but probably never succeeds in accom-

plishing a complete healing of the primary tuberculous focus. A positive tuberculin test makes an infallible diagnosis of childhood tuberculosis, demonstrating through the allergic skin reaction that the patient harbors within his body a primary focus of tuberculous disease, but does not exclude the possibility of the simultaneous presence of the adult type of tuberculosis. By means of the X-ray the location, type, and extent of this lesion may be demonstrated in twenty-five per cent of the infected cases. The X-ray fails to reveal any lesion in the remaining seventy-five per cent of positive tuberculin reactors. The stethoscope is of comparatively little value in making a diagnosis of tuberculosis of first infection. It is doubtful if this condition can be discovered by auscultation in more than a fraction of one per cent of the cases.

It has been shown that in from 50 to 75 per cent of the cases of adult pulmonary tuberculosis, lesions of childhood tuberculosis antedating the development of the adult lesion, may be demonstrated by means of the X-ray. The opinion is growing that the majority of cases of consumption are derived from reinfection of individuals who once had the childhood type of the disease. It appears that the first infection, in a sense, prepares the soil for the later development of phthisis when the allergic individual receives an inoculation by the tubercle bacillus for the second time. The fact that so many patients recovering from their first infection later break down with consumption on reinfection, does not constitute very convincing evidence that our resistance to the disease is improved by the first infection. The facts seem to indicate that the first infection may render us susceptible to fatal forms of the disease should we perchance experience a later reinfection. At any rate childhood tuberculosis tends to be relatively benign, whereas adult tuberculosis is inclined to be malignant and fatal.

BRONCHIECTASIS

Bronchiectasis is often confused with tuberculosis in that cough and sputum are prominent features. The clinical features of bronchiectasis in children are fairly constant, including chronic cough, aggravated especially by cold, recurrent transitory attacks of chills, slight and irregular fever, moderate leucocytosis, and pronounced susceptibility to respiratory infections. In the more advanced and long standing cases the sputum may be abundant, and clubbing of the fingers and toes develops. Coarse râles elicited especially on forced inspiration and expiration are constantly present in the basal portions of the lungs month after month. In practically one

hundred per cent of the cases disease of the paranasal sinuses may be demonstrated both by X-ray films and by the constant presence of mucopurulent dripping in the nasopharynx. The constancy of the association of disease of the sinuses and of the basal portion of the lungs has resulted in terming the condition chronic broncho-sinus disease. The location and extent of the bronchiectatic areas may be demonstrated by X-ray films after the intratracheal introduction of lipiodol.

When bronchiectasis is present the therapy required includes operative procedures to relieve the sinus disease, postural drainage, phrenectomy, and pneumothorax; in extreme cases lobectomy must be done.

The physician has opportunities to examine many children suffering from chronic, recurring broncho-sinus disease often in stages preceding the development of bronchiectatic dilatations. In such instances, if he realizes the future potentialities of the condition if permitted to persist, active measures will be instituted to relieve the

condition and thereby prevent the development of bronchiectasis, a condition which it is exceedingly difficult to treat successfully.

When these cases are seen in stages when they still fall in the class of broncho-sinus disease without bronchiectasis, efforts should be made to prevent recurring respiratory infections, to avoid exposure to cold through improper clothing and housing, and to employ all measures known to promote health in general. In addition the disease of the paranasal sinuses should be relieved, by operative measures if necessary. Finally and most important, these patients should be instructed to sleep in warm rooms with windows closed during the cold months of the year, and with the foot of the bed elevated to such an angle that continuous drainage is favored from the basal positions of the lungs during sleep. The regime of sleeping in warm rooms with the head lower than the feet should be continued over a period of a few years, and in this manner many may be saved from developing that chronic, practically incurable condition known as bronchiectasis.

This is the eleventh of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

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LUNGS TRACHEA BRONCHI (Cont.)

D. General Considerations of Pathology

1. *Diffuse density* in one lung or the other, or both, may be: pneumonia, pleural effusion, pulmonary atelectasis, lung fibrosis.
2. *Diffuse increased radiability* may be: Obstructive emphysema, ordinary emphysema, pneumothorax.
3. *Localized density* may be:
Any pathological change excluding air from the lung and introducing a denser substance; viz., abscess, infarct, consolidation of any type, localized atelectasis, fibrosis, encapsulated effusion, tumor.
4. *Localized increased radiability* may be:
Localized pneumothorax, cavity, abscess, localized obstructive emphysema, dilated bronchi.
5. *Hilum or root shadows of lung are enlarged in:*

Hodgkin's disease, lympho-sarcoma, tuberculosis of lymph nodes, leukemias, infections in the lungs, congestion of lungs, chronic bronchitis with emphysema, pneumoconiosis, metastasis from carcinoma of breast and rarely from other malignant tumors.

6. *Lung or linear markings increased in:*
Congestion, infections, pneumoconiosis, and occasionally metastatic carcinoma arising from the breast.
7. *Mottling of lung field occurs with:*
Early tuberculosis, congestive processes, infections.
- E. *Pathological Conditions of Upper Respiratory Tract*

1. *Trachea.*
a. Compressions and displacements occur from aneurysms of the arch, tumors, and more commonly substernal thyroid. They are well shown in both antero-posterior and lateral views.

- b. Fistula between trachea and esophagus is rare. It can be demonstrated by the passage of the barium meal from the esophagus into the trachea and then into the bronchi, outlining the bronchial tree.
2. *Bronchi.*
 - a. Acute bronchitis.
Shows slight mottling of lungs diffusely with increased prominence of the linear markings. Frequently the roentgenogram is negative.
 - b. Bronchiolitis (discussed under pneumonia).
 - c. Chronic bronchitis.
Fibrosis about the bronchi and emphysema occur producing:
 - (1) Thickening of hilum shadows.
 - (2) Marked increase in linear broncho-vascular markings especially extending into base.
 - (3) Diffuse increase in radiability of lungs.
 - (4) Low diaphragms, narrow heart, signs of emphysema.
 - d. Bronchiectasis.
Multiple dilations of bronchi either fusiform or rounded give the following:
 - (1) Narrow stripes of decreased density surrounded by areas of density.
 - (2) Numerous rounded areas of the same type.
 - (3) A spongy or honeycomb appearance at the bases.
 - (4) Occasionally very large areas of decreased density — cavities — surrounded by areas of increased density and lines of fibrosis.
 - (5) The findings always in the lower lobes.
 - (6) Important to trace the shadows of the dilated bronchi well down to the diaphragm and out to the periphery as in the inner upper portions, the normal bronchi can be visualized.
 - (7) Frequently there are marked densities hidden by the heart. Examination in the antero-posterior position may reveal these.
 - (8) The findings may be present below the domes of the diaphragms and thus be almost invisible.
 - (9) Broncho-pneumonia in the form of localized rounded areas of great density is often superimposed especially in children.
- (10) Pleuritic adhesions, diaphragmatic adhesions, and atelectasis of the lung may be accompaniments.
- e. Bronchial stenosis.
Produces atelectasis or "drowned-lung," a lobe or portion of a lobe becoming very dense. (See under foreign bodies and atelectasis.)
 - f. Bronchogenic carcinoma. (See under tumors of lung.)
3. *Value of x-ray examination.*
Roentgen examination is of great importance especially in the diagnosis of bronchiectasis, in the determination of its extent and whether or not it is bilateral. Nevertheless marked degrees of chronic bronchitis, acute bronchitis, asthma, and emphysema may be present with only minimal roentgen findings. A negative roentgen diagnosis in bronchial diseases (unless iodized oil has been used) is of little significance.
- F. *Acute Pulmonary Conditions*
1. *Value of x-ray examination.*
By roentgen examination the following can be determined:
 - a. Whether or not parenchymal pathology is present. This is especially important in:
 - (1) Differentiation of acute bronchitis from broncho-pneumonia in children.
 - (2) Determination of the presence of beginning pneumonia in those cases, especially in children, that are suspected of acute abdominal conditions, particularly appendicitis. This is a very valuable procedure. Pneumonia can usually be demonstrated within 18 to 24 hours after onset of symptoms and routine films in such cases may prevent an unnecessary operation.
 - b. The type of pathology, viz., abscess, bronchial or lobar pneumonia.
 - c. The extent and location, which lobes, and how many involved.
 - d. The progress, whether consolidation is increasing or spreading.
 - e. Resolution, whether normal or slow.
 - f. Residues such as abscesses, unresolved pneumonia, pleurisies, etc.
 2. *Pathological findings.*
 - a. Pulmonary congestion.
 - (1) Pulmonary vessels at hilum greatly enlarged.

- (2) Linear markings greatly thickened and extend out to periphery.
 - (3) Either a diffuse fine or coarse mottling of whole lung field.
- b. Broncho-pneumonia.
- (1) Extremely small areas often invisible.
 - (2) Usually striking densities along linear markings.
 - (3) Rounded multiple densities irregularly distributed.
 - (4) Coalescent type producing large, irregular masses of density not confined to a lobe.
 - (5) Bronchiolitis or capillary pneumonia giving homogeneously distributed, coarse, small, irregular densities resembling miliary tuberculosis except that they are larger, nearer the hilum, and less regularly distributed.
- c. Lobar pneumonia.
- (1) Onset may be peripheral or central. The former gives a triangular, dense, homogeneous shadow extending in from the periphery toward the hilum with base at periphery. The central type gives a rounded off shadow at the hilum extending into the lung field with an irregular, radiating border. It is probable that most of these are really peripheral but are posterior and medial giving the appearance of a central lesion.
 - (2) Frank lobar pneumonia gives a very dense, homogeneous shadow confined to one or more lobes. The borders of the shadow can be made out according to the anatomical arrangement of the lobe.
 - (3) Arrangement.
On the right side, upper lobe pneumonia gives a dense shadow in the upper portion with a sharp horizontal lower border. The middle lobe shows a sharp upper border and a thinned out, hazy lower border. The lower lobe is similar to the left lower lobe. On the left side, upper lobe pneumonia gives a dense shadow in the upper portion and extending downward, becoming thinner and having a hazy lower border. The lower lobe gives the reverse picture, the upper border being thin and hazy. Frequently a sharp line of lessened density can be seen between the diaphragm and the consolidation. On lateral view the posterior position of the lower lobe consolidations and the anterior position of the upper and middle lobe consolidations is seen. The latter is especially well shown as a triangular shadow with its base at the anterior wall, its upper border horizontal and straight across, its lower border oblique.
- d. Central pneumonia.
Occasionally in children and rarely in adults the central density as shown in the onset of a lobar pneumonia never involves the whole lung. X-ray examination is very valuable as it points out clearly pathology which is exceedingly difficult to detect on physical examination.
- e. Abortive pneumonia.
The true type is rare but the complete clearing of a consolidation in 24 hours has been observed.
- f. Influenzal broncho-pneumonia.
Certain types appear near the apices and resemble beginning adult tuberculosis very closely. Resolution may take place in a comparatively short time leaving no residue and thus establishing the diagnosis as non-tuberculous.
- g. Resolution of lobar pneumonia.
- (1) There is no change in the x-ray appearance at the time of or for 24 hours after crisis.
 - (2) Then a breaking up of the dense shadow occurs and requires 3 to 10 days for completion. The appearance of the lung changes to a group of irregular, feathery-like shadows which gradually disappear.
- h. Residues of pneumonia.
- (1) Thickened markings and hilum shadows.
 - (2) Interlobar pleuritic lines.
 - (3) Areas of density indicating lack of resolution.
- i. Unresolved pneumonia.
This gives multiple areas of density. The shadow shows very marked density and may be confused with tumor. The distribution may be lobar or irregular. Multiple areas of lessened density may be present representing abscesses.

j. Gangrene.

This represents a similar appearance to unresolved pneumonia with cavities.

k. Pulmonary infarcts.

These may be multiple or single, are triangular in shape, but may be rounded and appear as isolated areas of densities, lobular in distribution. They resemble broncho-pneumonia closely and are difficult to distinguish from it and from early abscess formation.

G. *Miscellaneous Pulmonary Conditions*1. *Massive atelectasis* (post-operative massive collapse).

a. Findings:

- (1) A marked density of one or more lobes of the lung often resembling pneumonia.
- (2) Diffuse mottling through the lung.
- (3) Upward displacement of the diaphragm on the side of the lesion.
- (4) Displacement of the trachea, heart, mediastinum toward the side of the lesion, often extreme.
- (5) Emphysema of the normal lung.
- (6) Rapid resolution occurring usually more rapid disappearance of the shadow than in pneumonia.
- (7) Occasionally alternate collapse and clearing occurring, a dense shadow present one day, gone the next.
- (8) During the course of a pneumonia a sudden displacement of the mediastinum toward the side of the lesion indicating the onset of atelectasis as a complication.

2. *Foreign bodies in the respiratory tract.*

a. Findings:

- (1) If metallic, a dense shadow readily recognizable.
- (2) With complete obstruction of a bronchus a condition similar to massive atelectasis involving the area supplied by this bronchus. Frequently the shadow is nearer the hilum.
- (3) If present for a long period of time, an abscess. (See later.)
- (4) If the obstruction is partial, emphysema of the part involved. The mediastinum is then displaced to the opposite side, the affected lung is less dense than the normal lung, the contrast appearing best during deep expiration.

The respiratory movements of the mediastinum in cases of pulmonary atelectasis or obstructive emphysema can be observed fluoroscopically to great advantage. During inspiration the mediastinum moves toward the affected side, whether it be atelectatic or emphysematous. During expiration the reverse is true.

3. *Pulmonary abscess.*

a. Findings:

- (1) An area of density, not sharply demarcated, usually in the lower lobes, with a hazy, radiating margin. It is not lobar in location and has a feathery appearance.
- (2) Later a cavity, *i. e.*, an area of decreased density in which the lung markings are not well seen. In the upright position a fluid level is shown, a horizontal line of density. In the lateral position this may also be shown lying parallel to the long axis of the body.

b. Differentiation.

It is differentiated from tuberculous cavity by

- (1) A constant fluid level.
 - (2) Lower lobe position.
 - (3) Absence of other areas of tuberculosis.
 - (4) A thicker area of density about it.
- The differentiation is not always possible.

4. *Actinomycosis and blastomycosis.*

These produce areas simulating pulmonary abscess or a typical pneumonia.

5. *Syphilis.*

Gives either isolated densities near the hilum resembling tumors or a diffuse fibrosis. Occasionally atelectasis occurs due to a bronchial stenosis. The X-ray findings are rarely characteristic.

6. *Pneumoconiosis.*

A general disease due to inhaled dust especially that of quartz, granite, silica of all kinds, metals, especially zinc.

It produces a very marked increase in size of the hilum shadows with thickening about them. As the disease progresses radiating lines of density pass out diffusely into the lung fields along the linear markings giving the appearance of dense fibrosis. The findings are most striking in the inner third, less marked in the middle zone and almost absent in the outer zone. The changes

tend to be uniform. They occasionally simulate tuberculosis but may be distinguished by the comparatively uniform density and distribution.

H. *Differential Diagnosis*

A dense shadow involving the whole or part of one hemithorax may be differentiated by observation of the mediastinum as follows:

1. *Pleural effusion* producing displacement of the mediastinum away from the side of the lesion, the diaphragm downward.
2. *Pneumonia* producing no displacement of the mediastinum.

3. *Massive atelectasis* (foreign body, post-operative, pneumonic) producing displacement of the mediastinum toward the side of the lesion, the diaphragm upward, temporarily.

4. *Chronic lung fibrosis* (tuberculous or post-pneumonic) producing displacement of the mediastinum toward the side of the lesion, the diaphragm upward, permanently.

5. *Tumor*, producing displacement of the mediastinum away from the side of the lesion but not constantly. Occasionally the reverse is true due to bronchial compression and secondary atelectasis.

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—31—274.

A white woman, age 62, was admitted to hospital January 14, 1931, complaining of fracture of her left femur which occurred while she was walking slowly upstairs. Her leg gave way and she felt immediate severe pain.

She first consulted a physician in 1923 because of a hard mass in the left breast. The breast was amputated. In 1924 the right breast was amputated because of a similar hard tumor in it. The patient had no further symptoms until about three months prior to admission when she first noticed that her skin was becoming yellow. Later the yellow color became more marked and itching of the skin annoyed her. Recently she had felt weak and tired. Never had had any abdominal pain. The stools were brown but the urine was very dark in color. Her mother and father died of old age.

On admission definite emaciation was noted. She complained of pain in the left thigh. The skin was extremely jaundiced. There were numerous scratches over the body produced by finger nails. There was a posterior cervical adenopathy. The thyroid was not palpable. Subcutaneous tumors in the supra- and infra-clavicular spaces on the left side. Blood pressure 100/70. Heart and lungs negative. Numerous subcutaneous nodules over the abdomen. One large indefinite mass in the epigastrium; another in the region of the ascending colon. The left femur was fractured in about its middle portion. Temperature ranged from 99° to 101.5° while she was in hospital. Hemoglobin 73 per cent; red blood cells 4,230,000; white cells 11,200. Icterus index 25.

X-ray showed apathologic fracture in the upper third of the left femur, due to a central expansive tumor which caused destruction of the cortex. Death February 11, 1931.

Post-mortem report. Subcutaneous fat five mm. thick. Gall bladder is enormously distended; measures 15 cm. in length and 7 cm. in diameter. The liver is at the costal margin in the right midclavicular line. The left pleural cavity is completely obliterated by old fibrous adhesions; some adhesions in the right cavity. One small metastasis in the liver. Metastasis in the common bile duct which causes marked stenosis of the duct. Metastasis in the right ureter at the pelvic brim causing right hydronephrosis. Microscopic examination shows adenocarcinoma.

Diagnosis. Primary carcinoma of the breast; metastasis to the skin, cervical and axillary lymph nodes, peritoneum, common bile duct, right ureter, pleura, ovaries, and left femur.

Comment. Late recurrence of a carcinoma of the breast frequently involves the bones. The clinical interpretation of the jaundice would ordinarily be metastatic carcinoma of the liver but in this case obstructive jaundice was due to a metastatic nodule which blocked the common bile duct.

Autopsy—31—262.

The case is that of a white man, 66 years old, admitted to hospital January 21, 1931. In January 1928 he first noticed a sore on his lower lip which did not heal. He attributed this to an injury. He was first

seen by a physician in January 1929. The lesion on his lip was present at this time but was not treated. In June, 1929 the lesion had grown to about the size of a nickel. He was seen by another physician who told him that the lesion was not serious and recommended outdoor life. Early in January, 1930 he was seen by a third physician. At this time the lesion was about two inches in diameter. This physician made a diagnosis of malignancy and began treatment by cautery. The patient discontinued this treatment because of the pain. In September, 1930 the tumor began to grow very rapidly.

The patient noted dribbling of urine and burning on urination. There were several enlarged cervical lymph nodes at this time. Patient had abdominal distress, especially after heavy meals; he also had some diarrhea. Because of the various symptoms he had to go to bed. In December, 1930 he had a mild stroke; became unconscious for a short time. From that time he was confused mentally. The tumor had grown very rapidly and caused him a great deal of pain.

On admission January 21, 1931 he was extremely emaciated with an enormous tumor of the lower lip. The tumor was of cauliflower shape, 14 cm. transversely by 10 cm. vertically. It was soft and had numerous areas of necrosis. There was a foul odor to the tumor. A hard submental lymph node, about 1 cm. in diameter, was found. There was a cervical node about the size of a walnut. The heart and lungs were negative. Blood pressure 106/66; pulse 110. Abdominal examination showed tenderness in the lower right quadrant. The urine was negative. Blood: hemoglobin 70 per cent; red cells 3,340,000; white cells 48,650; polymorphonuclears 89 per cent; lymphocytes 9 per cent; monocytes 2 per cent.

X-ray showed no involvement of the mandible. January 24 he had involuntary defecation. X-ray treatment of the tumor was begun. Pulse 100; temperature 99.8°. January 25 patient was incontinent and very weak; irrational; complained of some abdominal distress. January 27, x-ray treatment; temperature 100.8°; pulse 128. January 30, another x-ray treatment; temperature 99°; pulse 100. February 2, x-ray treatment; patient took nourishment poorly and had developed some difficulty in swallowing; temperature normal; pulse 82. February 4, x-ray treatment; patient complained of pain in the lower jaw; considerable drainage from the lesion; blood urea nitrogen 29.3 mg.; temperature normal; pulse 100. February 6, complained of abdominal distress; very confused; enema with good results; 2000 cc. of 5 per cent glucose intravenously; patient was tired and weak; hypodermoclysis given. Pulse and temperature normal. February 9, 20 gold implants placed in the tumor; total radiation given to the tumor 2640 millicurie hours; temperature 99.2°; pulse 108. February 10, some cough; very weak and unable to take fluids by mouth; 2000 cc. 10 per cent glucose intravenously. The tumor had decreased to less than half the original size. Death February 10.

Post-mortem report. Marked emaciation. Large ulcerating tumor of lower lip. Scanty subcutaneous fat. Heart 250 grams; brown atrophy. Aspiration pneumonia in both lungs. Liver 1000 grams; atrophy and cloudy swelling. Kidneys together weigh 310 grams; slight cloudy swelling; normal pelves and ureters; trabeculated bladder; enlarged prostate. Marked sclerosis of the aorta.

Microscopic examination shows squamous cell carcinoma of the lower lip. The enlargement of the regional

lymph nodes is caused by infection.

Diagnosis. Squamous cell carcinoma of the lower lip with extensive ulceration and infection. Death from emaciation, infection, and aspiration pneumonia.

Comment. This case illustrates a neglected carcinoma of the lower lip. This tumor is easily curable in the early stages but is usually incurable at the stage when this patient first appeared at the hospital. Two physicians failed to recognize the nature of the tumor in 1929 although its gross appearance on the patient must have been entirely characteristic.

Autopsy—31—242.

A nullipara, aged 29, was admitted to hospital November 24, 1930. She had had acute rheumatic fever at the age of 15 years, at which time she was incapacitated for a long time and was known to have had a cardiac involvement afterwards. She was apparently well until shortly before her admission to hospital. On admission she was nervous, had a temperature of 100.4° and basal metabolic rate of +53. A diagnosis of Graves' disease was made and thyroidectomy was done on November 27. November 29, the temperature rose to 103.2° and she had chills. Thereafter the temperature was of the septic type continuously, sometimes reaching 105°. There was a systolic murmur at the apex, transmitted to the axilla. The thyroidectomy wound never healed and later began to discharge a purulent material.

Further inquiry revealed that the patient had had chills and fever for some time before entering the hospital on November 25. Some time in December a positive blood culture of streptococcus viridans was obtained. January 17, 1931 petechial hemorrhages were first noted, first seen in the conjunctivæ. A large spleen was found on this date. The leucocyte count varied between 13,000 and 21,000. The urine now contained numerous red blood cells, leucocytes, a large amount of albumin and many casts. On February 2, the patient voided for the last time, there being anuria from that time until death. February 5, blood urea nitrogen was 121 mg. Convulsion on February 7. Death February 10.

The thyroid removed at operation was said to show hyperplasia.

Post-mortem report. Petechial hemorrhages in the conjunctivæ and skin. Purulent material exudes from the operative wound in the region of the thyroid; a small sinus extends downward into the tissues at this point. A small piece of thyroid gland remains which on microscopic examination shows no evidence of hyperplasia.

The heart weighs 480 grams; there is an old mitral valve defect, superimposed upon which are numerous soft vegetations. The other valves are normal. Bilateral bronchopneumonia. The spleen weighs 210 grams; contains several large infarcts. The liver weighs 1730 grams; no passive congestion. The kidneys together weigh 640 grams; a few large infarcts; numerous petechial hemorrhages through the cortices. Microscopic examination of the kidneys shows acute diffuse glomerulonephritis. There is thrombosis of the left common iliac artery.

Diagnoses. 1. Bacterial endocarditis on the basis of an old rheumatic valve defect. 2. Terminal uremia from acute diffuse glomerulonephritis.

Comment. It is probable that the patient's symptoms were due entirely to bacterial endocarditis from the onset. The increased basal metabolic rate may have been due to fever. A terminal uremia is occasionally seen with bacterial endocarditis.

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THE SPLITTING OF FEES

Some of my acquaintances have objected to the word "split" which is used in the title of this editorial. Why it should give offense has aroused some speculation. Would the word "division," which seems to be more acceptable, change the merits of this argument? Criticism may devolve upon us for presuming to discuss a subject which may have already been done to death by the editorial pen, but like the many-headed monster, the subject rises again, more vigorous than ever. This is not a dead issue, its past discussions have not killed it, and from observation the activities of medical organizations and legislatures have had little effect on its vitality. We discuss it here because, of late, its place in many professional conversations has been paramount.

In the first place, what inspires the practice of dividing fees, either openly or secretly? There are two factors operative in its causation, first, the incentive for increased business by the donor, and, secondly, desire for increased income by the recipient, of the divided fee. It is not necessary to point out the potential harm the practice of fee division may bring about. Given a conscientious recipient and an able donor, it is probable the patient does not suffer. When this practice is condoned, certainly the patient is often at the mercy of unscrupulous and mercenary attendants. Surely this statement is not exaggerated. In view of this situation then, the practice must and should be avoided by respectable and conscientious medical men.

With the development of group medicine and the establishment of groups in nearly every large center of trade and population, a new situation has developed which is somewhat different from that which existed a decade or more ago. Then the patient was referred by a physician to some independent specialist, but the physician pretty

well controlled his clientele. There can be no question that with the development of good roads it has become increasingly difficult for the rural practitioner to hold his practice and in some instances his income has suffered. However, there are many examples of rural practitioners who have kept the confidence of their community and who have prospered, in many instances, beyond the men located in the so-called medical centers. Among this class of physicians are those who do not seek fee divisions. On the other hand, some practitioners seek fee division perhaps because of the necessity of replenishing a dwindling income. It resolves itself into a proposition of the personal equation.

Perhaps there is some justifiable criticism in the fact that men to whom patients are referred charge fees which are not commensurate with the service rendered, and which being excessive, prohibit the referring physician from charging and collecting an adequate fee for his service. This argument has been the bone of contention in numerous discussions of this subject. However, it must be granted that every man must evaluate his own services and if they be too high, then he must suffer the consequences.

In surveying this matter of fee splitting in its broadest aspect, let us grant then that through established custom the specialist has been overpaid and the referring physician has been underpaid. Does this situation indicate the division of the fee as its solution? Will such procedure help to establish in the patient's mind the real value of his original physician's services? We do not believe so. In our opinion, both parties in such a transaction should charge and collect his own fee. Until the socialization of medicine, when all physicians are employed by the state, or until we as a profession become debased into rank commercialism with its barter of human misfortune, some other solution satisfactory to both sides should be sought.

What is the solution?

It lies in the ultimate education of the public as to the value, not only of his local physician's

services, but also of the services of the specialist to whom he has been referred. This education has been neglected by the profession for I know of no organization which has made any decided effort along this line. It should be undertaken by both the local physician and those in the contiguous center to which his cases are referred and in addition to this, medical organizations should co-operate in spreading the information. Unquestionably the local man has the greatest influence in this regard. It is he, who in daily contact, by the example of conscientious duty and service, can make his work appreciated. The incident of the physician who offered to waive his personal fee if the patient would go to a surgeon, who divided the fee equally with him, can have little effect upon raising the quality of the community's estimation of the value of his services. Co-operation with the local physician on the part of groups or specialists receiving referred patients, in regard to fee regulation, certainly would ameliorate the situation and eventually would solve the problem of fee division, whether done openly or secretly.

J. O. A.

CANCER VERSUS TUBERCULOSIS

Funds in large amounts are now being put into Cancer research for the discovery of a cure. Philanthropists are leaving bequests to the millions in their wills. These same people are in a position to aid greatly in the eradication of tuberculosis.

Cancer is a disease of advanced age and it shortens the period of life only ten to fifteen years. Tuberculosis is a disease of youth and shortens a person's life by about thirty-five years. Cancer is not infectious and tuberculosis is infectious. When a person dies of tuberculosis he leaves his children without support at the age of ten or less, and he leaves some of them infected with tuberculosis. When a person dies of cancer, his family is already reared and they are healthy since they have not been in contact with a contagious disease. Tuberculosis is by far the burning fire which can spread through the entire forest while cancer is a slow smouldering fire in the underbrush which will not spread to the surrounding forest, since it is not a contagious disease. Any funds put into the eradication of tuberculosis are sure of accomplishing something since the disease can be eradicated. With cancer some of the funds might be wasted if the cure is not discovered. The public needs to be educated in this matter, and it is the duty of the physician and others knowing of anyone who plans to give funds toward the eradication of disease to recommend that tuberculosis be considered. We have eradicated

50 per cent of the tuberculosis in the past twenty years and we could have eradicated practically all of it if we had had sufficient isolation of affected people in sanatoria.

The death rate in forty-five large cities of the United States dropped from 87.3 per hundred thousand of population to 81.3 in the year 1929, but this is not fast enough as long as the method is known. Minnehaha County in South Dakota is at the present time spending \$9,000.00 a year for the maintenance of the State sanatorium and it will be worth while from an economic standpoint to dispose of the disease permanently. This amount of course does not include the individual economic loss and the loss through charitable organizations in caring for the families of invalid tuberculous parents. Human beings have a weakness for making discoveries rather than for doing things routine. We would rather discover the North Pole than build a few houses for the worthy poor in the slum districts. Is it possible that we will be as little inclined to apply the methods for getting rid of cancer when it is known as we are at present with the tuberculosis? Will the funds used in research of cancer be withdrawn for other research as soon as the method is known?

We should, of course, not neglect cancer but we should for the time being, at least, invest more funds for the eradication of tuberculosis. It is altogether possible that when the cancer problem has been thoroughly exhausted and the basic factors concerning this disease are known that we will be as helpless as we are in the treatment of arteriosclerosis. It may be an incurable disease of old age and if so, very little benefit will have been derived from the expenditure of funds in this direction. Let us get rid of tuberculosis and other contagious diseases, the methods for the eradication of which are known, first, and in the meantime do as much research as possible to discover more facts about cancer.

C. W. F.

DR. LE ROY SOUTHMAYD

Dr. LeRoy Southmayd, of Great Falls, Montana, died at his home Saturday, August 29th, after ailing but a few days which terminated in a stroke of apoplexy nine hours before death.

He was born in Alder Gulch, Montana, on July 19, 1869, the son of LeRoy and Sarah Bartlit Southmayd, and was the first native son of the state to complete a medical college course. The elder Southmayd, who came to Montana from Colorado in 1863 by ox team, took an active part in the colorful vigilantes' crusades against road agents and murderers as was so necessary during

that exciting period in the early '60's and his brave exploits are recited in all books dealing with early Montana history.

Dr. Southmayd attended the public schools in Montana and later went east for his further education and received his M.D. degree from the University of Michigan with the class of 1892. He first practiced medicine at White Sulphur Springs, and later Virginia City, Montana, until 1898, when he served as assistant surgeon of the First Montana Volunteer Infantry Regiment for 18 months on active duty in the Philippines. On his return from the war in 1900 he located in Great Falls, where he remained in active practice continuously except for nine months' service during the World War, when, with the rank of Major, he was in charge of the 316th sanitary train at Camp Lewis, Washington, with 52 medical officers and 930 enlisted men under his supervision. He was a representative in the state legislature, having been elected from Cascade County last year.

He was a F.A.C.S., member of the State Board of Medical Examiners for 18 years, member of the County, State and American Medical Association and past president of the State and his County Society. He was an Episcopalian and a Scottish Rite Mason.

One of the lasting impressions of the annual meeting of the Montana State Medical Society held at Bozeman last July was to have arrived as Dr. Southmayd was delivering his presidential address, later to learn that he had lost the sight of both eyes a few years before. Without fanfare or gesture he stood before his colleagues and discussed the problems of the day. Without guile or pretense, he gave from the storehouse of his experience and wisdom counsel, that was listened to attentively, and that must have made a lasting impression on all those who were present. A fine contribution near the close of a useful life. There was no evidence of any impairment except of physical vision and no intimation of the nearness of the end. The most touching thing about the whole meeting was the sweet thoughtfulness displayed by his many friends of the sturdy, gentle stock of Montana in guiding his footsteps where he could not see, to and from the meeting place and about the hotel. Surely the history of Montana medicine would never be complete without the mention of his name.

MISCELLANEOUS

Dedication and Homecoming at Glen Lake Sanatorium

Glen Lake Sanatorium was the scene of great rejoicing on August 29th, 1931, as it was Homecoming Day for ex-patients and the occasion of the dedication of the new building given by the Citizens' Aid Society of Minneapolis.

It was the second Homecoming of former patients, which is to be an annual event hereafter. There were about one thousand present, four hundred of whom were ex-patients. Renewing acquaintances and reminiscing occupied most of the time. A band concert was given by the Shriners' Band and during the supper hour there was singing by a girls' quartet.

The new building, a four story structure, is attached to the Main Building and extends out from the East Wing in an L shaped fashion. This building, erected in the memory of Henry Hall Christian, was dedicated at four o'clock in the afternoon, Mrs. George C. Christian formally presenting the building in behalf of the Citizens' Aid Society and Dr. S. Marx White accepting it for the Sanatorium Commission.

Medical men were particularly interested in the building because it contains the laboratory and surgical rooms. On the top floor are the two major surgical rooms on the north side with a small amphitheatre in the larger room. Between the two rooms are the sterilizing and scrubbing rooms. Also, on the north side is another similar room which will be used for special examinations, urological, gynecological, etc. All of these rooms together with the plaster cast room are used for pneumothorax refills each morning. The need of these rooms may be realized when one considers the increasing importance of collapse therapy as an auxiliary measure to rest therapy in the treatment of pulmonary tuberculosis; nearly 6,000 pneumothorax refills, 100 thoracoplasties and 100 phrenic nerve operations were done last year, or about 33% of the patients received some form of collapse therapy. Adjoining the surgical suite are two laboratories, one of which will be used for frozen section diagnosis and the other for teaching of medical students during their two weeks residential period at the Sanatorium.

The second floor is to be used for Occupational Therapy and re-educational work. The latter section is composed of many class rooms where such class work as tailoring, shoe repairing, printing, barbering, manicuring, home economics, high school work, commercial work and many other subjects will be taught. During the past three or four years, grammar, high school and commercial work has been taught and the desirability of giving additional classes was keenly felt because so many of the patients need training in work which will be suitable for them after discharge. It is hoped that this addition to the Sanatorium's activities will lessen materially the relapses from tuberculosis.

The laboratories are on the first floor; on the north side are two large rooms which will be used for routine blood, sputum, urine examinations, pathological and bacteriological work. On the south side is a research laboratory, record room and diener's room. In the basement will be the museum, photographic room, printing and carpenter shops and store rooms.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.
Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

Who's Who In Public Health In North Dakota

George H. Spielman, M. D., Health Officer of the City of Mandan. Dr. Spielman is one of North Dakota's most active and interested Health officials. His co-operation with the State Health Department is 100%. His outstanding work in health was his efficient effort in the Mandan Meningitis outbreak last fall, when he took a leading part in all investigations and conferences. He is now in the midst of a Diphtheria Immunization Campaign for which he secured an appropriation of \$5,000. He takes a deep personal interest in the suppression of venereal diseases and makes his reports promptly and efficiently. He is a member of the Health Officers Association and attends its meetings. Last fall he was instrumental in having the entire student body of Mandan physically examined.



George H. Spielman was born at Shakopee, Minnesota, July 16, 1882. He acquired his elementary education in the public schools there and after leaving high school attended Bradley Polytechnic Institute at Peoria, Ill. Later he attended the Chicago College of Medicine and Surgery, from which he was graduated in 1908. In the fall of 1909 he began to practice at Flasher. In 1913 he spent the winter taking a post graduate course in Vienna, Austria. He returned to Flasher and remained there until 1917 when he moved to Mandan where he is still located. In August, 1910, he was married to Miss Helen I. Berrier and they have three sons, Lloyd, Byron and Alois. Dr. Spielman has been County Physician of Morton County and Northern Pacific Railway Surgeon for the past twenty years and about four years ago was appointed City Health Officer.

We are pleased to present Mandan's model Health Officer, Dr. George H. Spielman.

The Effect of Drouth on North Dakota's Water Supplies and Sewage Disposal Systems

In general, the drouth has had little effect in the eastern portion of the state, insofar as actually causing any community to be without water. This is due to the fact that most communities obtain their water supplies from deep wells and other underground sources.

In 1930 all purification plants experienced greater

concentration of mineral content in river water, causing an increase in the use of lime, alum or sodium the water level.

During 1931, conditions in the eastern part of the state have become more promising due to replenishing rains. This section of the state is more fortunate in this respect than the western part of the state.

The rural communities and farm districts have been affected more than the larger towns on account of the drying up of surface wells and also sloughs and creeks which were depended upon to supply water for stock.

The effect of the drouth on sewage disposal in North Dakota has been more noticeable. The drying up of coulees, creeks and diminishing flow in streams has caused an increase in the pollution of such streams. Many towns are confronted with the problem of remedying nuisances caused by the lack of sufficient water in streams to properly dilute the sewage discharged into them. Cities particularly affected in this manner are Grafton, Leeds, Langdon, Ellendale and Hankinson.

Liability For Medical Care of Indigents

With the approach of the harvest season, the liability of the Commonwealth for medical care of transient indigents again confronts us. This class of patients, together with our legal resident indigent patients, will constitute a real financial problem for several months to come. Indigent patients can be placed in two classes from the standpoint of liability, viz: Contagious and Infectious Diseases (including venereal diseases, even though they may not be quarantined) and Non-contagious and Non-infectious Diseases, accidents or other illness resulting in physical disability requiring medical care.

The former class comes under the jurisdiction of local Boards of Health. Sections 431 and 432 Compiled Laws of North Dakota, 1913, provide the manner in which bills incurred by local boards of health shall be paid. Individuals suffering from contagious diseases, including venereal diseases, cannot be deported to another state, and bills incurred in such treatments are audited and paid pursuant to Section 431 Compiled Laws, and thereafter may be handled as prescribed by Section 432. Neither residence nor non-residence affects the rights of county or city Boards of Health to require treatment and audit bills for payment of same incurred in connection with those persons found within the jurisdiction of such Board.

All individuals not suffering from contagious or infectious diseases, are cared for under the provisions of Section 2508. Sections 431 and 432 above referred to are in no way modified by Section 2508. An indigent before being cared for by Overseers of the Poor must have established a legal residence of one year in the jurisdiction of the Overseers passing on his case. (Bills incurred by Overseers of the Poor are paid pursuant to section 2508). In the interim, the Overseers of the Poor in his last established legal residence of one year, are responsible for his care and attention.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. Carl O. Rice, Minneapolis, will spend the next few months in travel and study in Europe.

Dr. and Mrs. John T. Rogers, St. Paul, have recently returned from an extended European trip.

Dr. J. S. Tschetter, who has been practicing general medicine at Huron, has moved to Woonsocket, S. D.

Dr. W. F. Bollinger, a graduate of the University of Chicago, is now associated with Dr. H. P. Volin, at Lenox, S. D.

Dr. G. A. Hedberg, formerly in practice at Canby, Minn., is now located at the Nopeming Sanatorium as house physician.

Dr. W. E. Heilesen, St. Paul, has moved to Hot Springs, S. D., and will be surgeon and consulting physician at the Black Hills Hospital.

Dr. J. F. Turner, who has been located for several years at Canton, has moved to Miller, S. D., and will open offices for general practice.

Dr. C. M. Adkins, who has been located for many years at Grygla, has moved to Thief River Falls, Minn., and will open offices for general practice.

Dr. G. H. Spielman, Mandan, N. D., has been named "Who's Who" for his outstanding work as a public health officer recently in North Dakota.

Dr. R. A. Salter, formerly in practice at Minneapolis, has moved to Hibbing, Minn., where he has accepted a position on the staff of the Morsman Clinic.

Miss Annie Kippen, who was superintendent of the Albert Lea, Minn., hospital for nearly 15 years, was recently killed in an automobile accident at Fullerton, Calif.

Dr. Ralph L. Parsons has opened offices for general practice at Monterey, Minn. This will be greatly appreciated, as no doctor has been located here for some time.

Dr. R. D. Wilson, who has been in active practice for the past 15 years at Aberdeen, has moved to Los Angeles, Calif., and will open offices in that city for general practice.

Dr. R. B. Radl, Dickinson, N. D., has sold his practice and has moved to Minneapolis, where he has accepted a position with the Student Health Service of the University of Minnesota.

Dr. L. M. Daniels, Minneapolis, who has been traveling in France, Germany and Switzerland during the last two months, has returned and is again at his office in the Medical Arts Building.

Members of the Renville County, Minn., Medical Society will hold monthly meetings during the fall and winter, and are to present a course of lectures from leading medical men of the state.

An addition to the Covell Hospital at St. Peter, Minn., at a cost of over \$12.00 is now completed, giving that progressive city one of the finest and most modern 30-bed hospitals in the state.

Dr. J. Nelson Ewbank, Blooming Prairie, Minn., has sold his practice to Dr. D. M. Daley, formerly in practice at Lewiston, Minn. Dr. Ewbank is undecided about his future location.

Dr. S. A. Donahoe, Sioux Falls, has been appointed surgeon for the Great Northern Railway Co. He takes the place of the late Dr. A. H. Tufts, who held this position for 35 years.

Dr. O. I. Sohlberg, St. Paul, a graduate of the University of Minn. Medical School and in active practice at that city for the past 15 years, has been made a member of the American College of Surgeons.

Over 20,000 children have been immunized against diphtheria in North Dakota during the last few months, according to a statement recently issued by Dr. A. A. Whittemore, Bismarck, State Health Department.

Dr. John E. Campbell, St. Paul, is back at his office, after spending the summer months touring Europe, visiting all the leading clinics. He reports conditions in France showing marked improvement.

Dr. Peter Potter, Butte, Montana, has returned from a European trip of several months. Mrs. Potter accompanied him on the trip, spending a large share of their time in traveling in Switzerland and France.

Contracts for the construction of the John Burns Memorial Hospital at Belle Fourche, S. D., have been awarded and work will be started at once. The hospital when complete and furnished will cost about \$100,000.

A large attendance of the members of the Eastern Montana Medical Society was held at Terry last month. After a fine dinner being served, a program was presented with Dr. Wm. A. O'Brien, Minneapolis, being the principal speaker.

Over 3,000 persons attended the dedication of the new Indian Hospital at Harlem, Montana, last month. This is one of the four hospitals that are to be completed this year for the exclusive use of the Indians. Dr. D. A. Moore is the physician in charge at the hospital.

Dr. Percy D. Peabody, Webster, was host to the members of the Whetstone Valley Medical Society on the evening of August 27th. Papers were presented by Dr. F. F. Pfister on "Diabetes and the General Practitioner," and one by Dr. Reid, on "Thyroid Diseases."

Dr. and Mrs. O. F. Melby, Thief River Falls, Minn., celebrated their twenty-fifth wedding anniversary last month. Both Doctor and Mrs. Melby have taken a very active part in church and community work of that city during nearly all these years.

Dr. William Warner Furber, one of the pioneer physicians of Cottage Grove, Minn., died this month at the age of 75 years. Dr. Furber graduated from Rush Medical College in 1878 and had been in active practice in that section of Minnesota during all these years.

Dr. Harold T. Nesbit, a graduate of the University of Minnesota, has recently spent some time visiting with physicians in Minneapolis. Dr. Nesbit is in charge of pediatrics at the Southwest Clinic, Dallas, Texas. He is also a member of the Pediatrics Staff of Baylor University.

The North Dakota Supreme Court has granted Drs. John and Elizabeth Rindlaub, Fargo, a new trial over the \$30,000 suit that was recently returned against them. The supreme court, in reversing the judgment of the lower court and ordering a new trial, held that "the defendants did not receive fair trial to which they are entitled under our laws."

Mrs. E. P. Wanzer, well known throughout South Dakota, being actively associated with public health work and also a member of the Board of Regents, died very suddenly last month at her residence at Armour, S. D. Mrs. Wanzer organized the South Dakota Public Health Association, and the Health Camp in the Black Hills was named in her honor.

The annual meeting of the Minnesota State Registered Nurses Association will open for a three days' session at Fergus Falls, September 24, 25 and 26. A fine program has been arranged and among the leading speakers will be Dean E. P. Lyon of the University of Minnesota, who will present a paper on "Some Aspects of My Nursing Education." Miss Olivia Peterson, Minneapolis, is president of the association.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters.) SPEAKER: William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month of October will be as follows: October 7th, Corneal Ulcer; October 14th, Prevention of Hay Fever; October 21st, Cretinism; October 28th, Brain Tumor.

Six appointments to State Boards were made today by Governor George F. Shafer, of North Dakota. Drs. W. H. Long, Fargo; H. F. Emert, Sarles, and J. E. Countryman, Grafton, were reappointed to the State Board of Medical Examiners. Miss Mildred Clark, Devils Lake, was reappointed secretary of the State Board of Nurse Examiners. Dr. J. O. Thoreson, Bismarck, was named a member of the Board of Osteopathy to succeed Dr. M. E. Bolton-Henry. Dr. B. K. Kilbourne, Fargo, was named to succeed Dr. Arne Oftedahl, Fargo, deceased, as a member of the Public Health Advisory Council.

Twenty farming communities in the province of Saskatchewan, Canada, have solved the country doctor problem by hiring their physicians out of tax funds at an annual cost of between \$7 and \$10 per family. The "municipal doctor" is paid an average salary of about \$4,000. As he is often allowed to charge small fees for operations, obstetrical service and the first home visit in a case of illness, he may increase this sum, in a typical instance, to nearly \$5,000. Most of the work, however, is done without direct cost to the patient.

The members of the Clay-Becker Minnesota Medical Society were entertained at a dinner given at Sand Beach Sanatorium, following which a program of interest was rendered. Forty-five physicians were present. The speakers were Drs. E. A. Myerding, St. Paul, executive secretary of the State Medical Association and the Minnesota Public Health Association; and Dr. J. A. Myers, professor of medicine at the State University and a nationally known authority on tuberculosis of children. Dr. Myers' subject was the "Mantoux Skin Test for Tuberculosis," and he stressed the advantage of this test in helping to discover early childhood tuberculosis in whom no apparent symptoms are found. Many lantern slides of different types of cases were shown and the doctors present voted it a very instructive and enjoyable occasion, and hoped that it could be made an annual affair.

INTERNATIONAL MEDICAL ASSEMBLY

INTER-STATE POSTGRADUATE
MEDICAL ASSOCIATION OF
NORTH AMERICA
MILWAUKEE AUDITORIUM
Milwaukee, Wisconsin
OCTOBER 19-20-21-22-23, 1931



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THE PROPHYLACTIC INJECTION TREATMENT OF VARICOSE VEINS DURING PREGNANCY * † ‡

By H. O. McPHEETERS, M.D., F.A.C.S.

MINNEAPOLIS, MINNESOTA

Childbirth has often been spoken of as "the greatest source of happiness in a woman's life," yet it is fraught with dangers and complications, many of which are serious. One of the most common of these is varicose veins, a complication which through its many and various forms may predispose to invalidism through the remainder of pregnancy and often for life.

This report is based on the care and treatment of forty-six patients with varicose veins complicating an otherwise normal pregnancy.

The average age was thirty, though the youngest patient was twenty-two and the oldest forty-two.

The number of pregnancies in each individual varied from one to sixteen. The average was three.

In most patients the varicosities developed during the second pregnancy, though three patients developed them at puberty, one in the thirty-ninth year and one during the seventh pregnancy.

The average patient complained of distress during the fourth month of pregnancy.

Treatment was usually carried out at the fifth month of pregnancy, and except for the observation period, was completed in twelve days.

*From the Varicose Vein and Ulcer Clinics at the Minneapolis General Hospital.

†The writer wishes to give full credit to the unusual coöperation and assistance of Dr. J. A. Urner in the preparation of this paper.

‡Read before the section of Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, Philadelphia, June 12th, 1931.

ETIOLOGY

Many writers have spoken of the enlarged fundus causing pressure on the iliac veins as the most important factor in varicose vein development associated with pregnancy. I do not believe it is of much importance. For the sake of brevity I will merely state that I believe the endocrine factor is the most prominent and important at this period.

ANATOMY

The varicosities usually involve the great saphenous group of veins, with branches across the lower thigh and along the main vein on the inner half of the lower leg. Three patients developed the varicosities through the vaginal veins, producing a large labiocele which anastomosed through collateral veins with the great saphenous trunk on the thigh. The varices varied widely in size and tortuosity. Those of the great saphenous averaged size three, with size three and one-half internal to the knee and size three in the upper third of the lower leg internally. Large bursts were often present. They were usually of the spider type.

INDICATIONS FOR TREATMENT

The indications for treatment in this group of patients were:

1. Relief from pain, ninety-two per cent.
2. Relief from the heaviness of the legs due to the large saccules of blood, two per cent.

3. Fear of disability during the later months of pregnancy as had occurred in former pregnancies, four per cent.
4. Cosmetic only, two per cent.

CONTRAINDICATIONS TO TREATMENT

There are but two positive contraindications to the prophylactic injection treatment of varicose veins during pregnancy. First, the presence of a true infectious thrombophlebitis; second, debilitating conditions such as decompensated cardiorenal disease or coincident accident or injury demanding rest in bed.

STATUS OF THE TREATMENT

The criticisms of this method of treatment are: (1) that it is meddlesome obstetrics and is unnecessary as the varicose veins disappear rapidly after confinement; (2) that bandages and elastic stockings can be worn with comfort and without fear of complications; (3) that the thrombus may extend further during pregnancy; (4) that an acute infectious thrombophlebitis may develop; and (5) that the formation of emboli may occur after injection.

In answer to the question of meddlesome obstetrics, I take the stand that any safe method of reducing the inconvenience of pregnancy is justifiable and has the same status as safe analgesia in labor.

Bandages and elastic stockings are of temporary value for the lower leg and give some relief, but they are not applicable to varices of the thigh and labia.

It has been proved repeatedly that there is no extension of the thrombus formed by injection treatment, though the infectious thrombus does do so.

The danger of producing an acute thrombophlebitis from the injection treatment is no greater than the natural incidence of this complication in the untreated patient.

The injection treatment does not predispose to embolism, as our recent work in recording the blood pressure in varicose veins and its relation to that in the deep femoral vein proves the reverse flow to be so marked that an embolus could hardly develop from the saphenous system.

SOLUTIONS

The solution of preference in treating varicose veins complicating pregnancy is the combination of sodium chloride with one of the sugars. The one I personally use is the Vari-Chlor-Ose which contains sodium chloride ten per cent, invert sugar thirty-seven and one-half per cent, and cane sugar five per cent by weight. Solutions of plain invert sugar serve very well, yet I believe

more recurrences will develop and the thrombus will not be quite so perfect and permanent after the plain sugar as after the combination solution. If one is not experienced in the technic he should use the plain sugar solution, because there is less danger of the development of a slough if a perivascular injection is made. When his technic is better developed, I advise the use of the combination solution.

The quinine and urethane solution is never used during pregnancy because quinine is known to have a stimulating action on the uterine muscle. I have had patients, not pregnant, begin menstruating following the injection of one-half a cubic centimeter of quinine and urethane, and I have often had them develop uterine cramps. I have never had a patient develop an abortion following its use, though I have used it during the first three months of pregnancy. Cases are on record, however, where abortion has occurred. Both sodium salicylate and the twenty per cent salt solutions can be used during pregnancy as at other times, but both may cause such severe cramps in the lower leg after the injection that I have discontinued their use entirely.

TECHNIC OF TREATMENT

The technic of the injection treatment of varicose veins during pregnancy is practically the same as at any other time. I believe that if we wish to develop a definite reaction on the intima of the vein by the injection of any solution, we should endeavor to control the dilution of that solution and its reaction to the greatest degree possible by making an effort to empty the veins, in order to inject the solution into the vein in as concentrated form as possible and to retain and localize it until it has exerted the desired destructive effect. It is impossible to inject any solution into a vein which is completely empty and collapsed, yet the nearer we can approach this ideal the better will be the result.

All of these patients have a positive Trendelenburg test, and, as has been repeatedly proved by the X-ray and blood pressure determinations, the blood flows downward in the varicose veins. This reverse flow is so marked that the veins remain filled from above when the patient lies flat and they can be kept emptied only when the leg is in elevation. I have the patient lie flat, elevate the leg sufficiently high to empty the varices, and then apply a tourniquet below the lowermost group of veins. With the leg still in elevation and the veins emptied, a second tourniquet is applied six to eight inches above the lower one. The leg is then lowered to the level of the table or

below it. A small amount of blood will drain into the veins through the incompetent valves in the perforating veins and from the tissues generally, so that when all the blood in this group of varices is milked or forced into one of the varicose loops it will distend that loop sufficiently for the needle to be introduced easily. As the solution is injected it will spread through all the veins of that segment. In this way the solution can be injected in full concentration and then retained locally by means of the tourniquets or occluder. The remaining portion of the varicose system above this area is then treated one group at a time until all the veins have been injected. At the beginning of treatment of each group the varices are emptied as in the foregoing.

If the condition is extensive and the varices unusually large and involve the labia, thigh, and lower leg, I prefer to treat only part of the veins at the first sitting and do my best to keep the remaining portion of the varicose system from becoming affected by the injections.

In any extensive case of varicose veins, particularly when associated with pregnancy, it is always wise when the treatment has been finished to elevate the leg high, and to thoroughly drain the injected solution from the varicose system. In that way we are sure to terminate the destructive effect and need not fear necrosis of a loop here or there due to the solution being pocketed locally.

To avoid the possibility of an excessive chemical phlebitis after treatment of extensive varices, the pressure pads and adhesive strips are removed in one-half hour and a tight bandage applied for support. The four inch Ace bandage is used for the lower leg and the Tricoplast adhesive bandage for the thigh and knee. This is very important. It is left on the thigh for seven to fourteen days. The watchful aftercare and attention to this supportive bandage is the greatest single factor in the entire treatment, and its true importance is not fully appreciated.

To more clearly show the results of this treatment I will briefly give four case reports.

Mrs. M. H., age 34 (Fig. 1), gravida six with four living children. She presented herself at the clinic, pregnant eight months and practically an invalid due to the pain in the extensive varices as shown. Patient was treated by the usual technic on Nov. 21, 1930, by the injection of 80 c.c. of vari-Chlor-Ose solution. Four days later 15 c.c. more were injected into a group of veins in the upper thigh still not thrombosed (Fig. 2). On Dec. 1, 1930, nine days after the first treatment,

the patient stated that she was free from distress and pain and was discharged without support. She continued on without pain or distress and had a normal confinement.

Mrs. J. S., 36 years old, gravida seven with five living children, the youngest twenty months old. Five months gestation at time of treatment. Patient practically an invalid due to the severe pain through extensive group of varices size three and four in left labia, posterior left thigh, internal left lower thigh, knee, and lower leg (almost identical with Fig. 1). The patient was treated on July 14, 1930, by the use of 100 c.c. seventy-five per cent invert sugar solution. Three days later she was given three injections, 5 c.c. each, of a sugar and salt mixture solution. Method of treatment was same as usual including careful application and reapplication of the Tricoplast supporting bandage. On July 24, 1930, ten days after treatment began, the leg felt fine, all veins were well thrombosed and patient was without pain or distress other than soreness of the tender thrombi. Two weeks later the patient discharged her maid and continued on very comfortably without further care or treatment to her confinement which was uneventful.

Mrs. D. C. (Fig. 3), age 40, gravida sixteen with eight living children. Eight months pregnant at time of treatment and an invalid barely able to be about due to the severe pain in her lower thighs and legs caused by the varices. Patient was treated Aug. 22, 1927, by the injection of 90 c.c. of twenty per cent sodium chloride solution. Aug. 31, 1927, nine days later, the patient was moving about easily with only a moderate soreness, and three weeks after treatment began, one week before confinement, patient stated that she had no pain or distress other than tender thrombi and was doing her own housework.

Mrs. R. F. (Fig. 4), 35 years old, gravida seven with four living children. Eight months pregnant. May 11, 1931, 100 c.c. Vari-Chlor-Ose injected with usual technic. Five days later the clinic doctor removed the Tricoplast, and in applying a new one made it too tight above the varices and it acted like a tourniquet causing more pain than relief. Following removal of the Tricoplast, application of hot packs for twenty-four hours and reapplication of the Tricoplast the patient progressed very well to a normal confinement.

A follow up questionnaire was sent to all patients treated and 38 replies were received. The questions with their answers were as follows:

1. Did you have pain before the treatments were given?

Yes, 97.5 per cent; No, 2.5 per cent.

2. Did you have relief from this pain following completion of the treatment?

Yes, 91.8 per cent; No, 8.2 per cent.

3. In your opinion was the treatment painful or serious?

No, 39.4 per cent; Yes, moderate, 50 per cent; Yes, Severe, 10.6 per cent.

4. Are you satisfied with the results obtained?

Yes, 92.1 per cent; No, 7.9 per cent.

5. Considering the relief from the pain, disability, etc., that followed the treatment would you choose to have it repeated if needed and advised during the course of a subsequent pregnancy?

Yes, 89.4 per cent; No, 10.6 per cent.

Ten of the patients in this series have had one or more pregnancies since their first treatment. Two of these patients have had their veins reinjected with good results during the course of the second pregnancy. In another patient the new varices were not painful but she definitely stated that she would wish to have them injected immediately should they become so. In another case there was a complete recurrence of the entire group previously treated. The new formations were size three and four, very extensive. The patient was made an invalid due to the extreme pain at the fifth month, and though I had treated her at the clinic with a good result and complete satisfaction to her during the first pregnancy, her private physician at this time persuaded her that the treatment was dangerous and that she should have nothing done until after the confinement. She spent the last three to four months of her pregnancy practically an invalid, and was not able to be on her feet more than three to four hours at a time due to the extreme pain, though she could have been relieved of the painful condition completely in the course of not more than two weeks. The other six cases had practically no recurrences of the veins formerly treated and very few new formations were noted.

The injection treatment of varicose veins during pregnancy tends to prevent the condition from increasing and lessens the possibility of the development of an acute infectious thrombophlebitis either ante partum or post partum. It is simply an attempt to make the woman comfortable throughout the remaining months of her pregnancy. In some patients, the veins continue to form and new formations will develop as the

pregnancy progresses. In two patients this was so extensive and rapid that the treatment was given up. If a few varices do remain following confinement or if any veins develop at some later period, they in turn can be injected the same as were the veins cared for originally. These are best treated about the third month post partum.

COMPLICATIONS

Abortion or premature labor is the complication most feared after the injection treatment. In my experience this has never happened though several cases have been reported in the literature. Three of these I have traced to the use of large doses of quinine. I do not believe that this occurrence need be feared with either sugar or the sugar and salt mixture.

The occurrence of an acute infectious thrombophlebitis after treatment is a serious complication. I have seen such cases in consultation though they have never happened in my own experience. The cases which I have seen were of definite localized areas in the superficial veins and responded well and quickly to local treatment. I believe this is a complication entirely avoidable and that it should not occur. In fact I believe the possibility of its occurrence is much greater through hematogenous, metastatic infection than through errors in technic at the time of treatment.

The development and occurrence of sloughs should be a thing of the past. The possibility of their occurrence has not been emphasized enough. We had a very severe and extensive one in this series. They are entirely the result of careless technic and due to a lack of adherence to the fundamental rules of treatment.

Excessive chemical periphlebitis following the injection will often occur in patients with extensive varicosities when too large an area is treated at one time.

No patient in this series has shown any evidence of embolus formation either before, during or after labor. As far as I know there has been no case of embolus accompanying confinement when varicose veins have been treated during pregnancy. The reverse flow tends to preclude the possibility of this complication by forcing the thrombus distalward instead of aspirating it toward the heart.

PRECAUTIONS

The same or even greater precautions should be taken in this work during pregnancy than at any other period.

1. Avoid the positive contraindications and in particular the presence of an acute infectious thrombophlebitis or an active infection elsewhere in the system.

2. Develop a most careful technic and adhere to the fundamental rules.

3. Use only a proven solution for varicosities treated during pregnancy. Never use quinine and urethane.

4. Give much attention to the care and comfort of your patient during the first few days following the injection.

5. The injection of varicose veins during the last two months of pregnancy is optional and the question must be decided for each case by itself.

CONCLUSIONS

1. Often a pregnant woman is made an invalid by the pain and disability occasioned by the occurrence of varicose veins and their complications.

2. In the past the treatment has been only symptomatic and temporary.

3. We should no longer accept the opinion of many men that women must have pain and discomfort during pregnancy unless the causative factors cannot be removed.

4. Injection of varices during pregnancy lessens the tendency to thrombophlebitis after delivery, since the blood is more or less stagnant in a varix.

5. It is perfectly safe to inject varicose veins during pregnancy and by so doing we can relieve the woman of her pain and discomfort in the course of one to two weeks.

GENERAL CONSIDERATIONS OF IRITIS*

By THOMAS D. ALLEN, M.D.

Associate Clinical Professor of Ophthalmology, Rush Medical College,
University of Chicago

Mr. President, and Fellow Practitioners of the Dakotas:

It is with a great deal of trepidation that I stand before you. Many of you are older and most of you are wiser than I. You have all had experiences which have been denied me. But, because the way of the world is to give to each of us experience denied to others, possibly a few words from me will not be amiss. Furthermore, it has often seemed to me that occurrences in my own practice meant more after hearing of similar facts from others. I hope, therefore, not so much to bring to your attention new methods or new technique, as to reemphasize the tremendous value and the great necessity for use of the usual methods and the usual technique in differential diagnosis and treatment of this unfortunately common disease.

Our first duty is obviously to make a correct diagnosis; a more arduous duty is to determine the cause, for upon a correct understanding of the etiology depends to a large extent the appropriate therapeutic attack; and the most pleasant duty is the attack itself with its resultant happy effect.

Our first and most important duty is to make a correct diagnosis. In iritis we find the cardinal signs of inflammation: heat, redness, pain, swell-

ing, and loss of function. These are all due to congestion of the tissues, to an increase in the blood content of the inflamed parts. In the iris itself there is so much pigment that this congestion is not readily recognized unless it is marked. This congestion changes the pattern of the iris, fills up its crypts and so enlarges the iris that the pupil is encroached upon; the exudate is in the sphincter muscle of the iris as well as in the connective tissue nearby, and interferes with its mobility; therefore, there is not the normal response to light or accommodation. As the pigment is on the posterior surface of the iris, the thickening of the tissue in front of this changes the color.

Because of the close association of iris and ciliary body when the one is inflamed the other participates; some of the vessels from the ciliary body penetrate the sclera in numerous places close to the limbus. Consequently we can see against the white sclerotic a hyperemic area. This is characterized (1) by its limitations to a zone immediately around the iris, usually about 5 or 6 mm. wide; (2) by the fact that it is composed of so many tiny blood vessels and capillaries that individual vessels cannot be readily distinguished; (3) by its purplish rather than brick red coloring; and (4) one cannot move the vessels by pressure on them through the lid, as one can the larger vessels of the conjunctiva proper. This hyperemia is to be differentiated from that found in

*Read before a joint session of the North Dakota and the South Dakota State Medical Associations, at Aberdeen, South Dakota, June 2, 3, and 4, 1931.

conjunctivitis, where the large vessels appear from the fornix, can be individually traced forward to within 5 or 6 mm. from the limbus, are of brick red color, and can be moved by pressure exerted through the lids.

Of as much importance, or more, are the other evidences of inflammation: heat, pain, and loss of function. The heat is difficult to determine, but is evidence of increase in vital activity of the tissues. The pain is the usual cause of complaint; it is due to the congestion of the tissues and stretching of the nerves, thereby probably tearing some of the delicate filaments from their normal attachments. The loss of function is the lessened motility of the pupil.

The appearance of the iris is altered not only by swelling of the tissue itself, but also because of the exudation which escapes from the iris. This consists of serum, leucocytes, and fibrin; sometimes one of these elements predominates; if it is serum, little change in the appearance is made; if fibrin, often considerable difficulty is experienced in examining the iris; if leucocytes, these will gather in the bottom of the anterior chamber (called hypopion) just as a pleural exudate collects in the bottom of the pleural cavity. One can change the position of this mass as one does of a similar mass in the pleural cavity, by changing the position of the body.

But the classical picture is produced by a moderate exudation of all three of these elements. The aqueous is altered in appearance, becomes sticky, and contains a fine cloud of cells which are inclined to stick to whatever solid object they touch. If they touch each other, they stick together. The larger masses are heavier and float in the lower part of the anterior chamber until they touch a wall. If this wall is the iris, they are inclined to stick to this tissue, thereby changing the appearance of that particular part of the iris. If this wall is the anterior capsule of the lens they will stick there, and will be more visible to the examiner because of the different color of their background; also they will interfere with vision. If this wall is the posterior surface of the cornea, they cover and incorporate within themselves the very thin layer of endothelial cells, and, therefore, seem to be sticking directly to Descemet's membrane. This condition has erroneously been called Descemetitis, because the exudate was on that membrane. These spots interfere with the transparency of the cornea, and, therefore, interfere with a clear perception of the iris.

Such corneal precipitates can be seen best by means of a clean cut band of light and a strong magnifier. Usually the largest of these precipitates are on the lower and the smaller ones on the upper portions of Descemet's membrane. Often they form a triangle.

Similar precipitates on the lens often adhere as well to the pupillary border of the iris and interfere with its movement. Because the iris is swollen at these times, the pupil is encroached upon, and, therefore, when the rest of the pupil dilates the adherent portion causes an irregularity. At times the adherent areas are multiple or they may even completely shut off the posterior from the anterior chamber. The aqueous, which is secreted from the ciliary body into the posterior chamber, cannot pass into the anterior chamber, but instead it balloons forward the iris, causing iris bombé or crater pupil. This is one way secondary glaucoma is produced. Aqueous is secreted into the eye but its outflow is interfered with.

In differential diagnosis conjunctivitis has been mentioned. In addition to the characteristic hyperemia, we have a watery, then purulent, then mucoid secretion in conjunctivitis, the sticky exudate being thrown out away from the eye; whereas in iritis it is thrown into the aqueous chamber, the only outside secretory evidence being tearing.

In noncongestive glaucoma, unless it follows an iritis, we have few of the evidences of inflammation. We may have irritation, evidenced by a hyperemia which may be circumcorneal. We have a dilated, vertically oval pupil, and an eye that is harder than normal.

In congestive glaucoma there is as a rule a generalized engorgement of all the vessels of the eye, but there is relatively less engorgement of those of the iris itself; therefore, its tissue is not so greatly thickened and does not cause a myosis, i.e., a small pupil. On the contrary, the great pressure within the eye causes a partial or complete paralysis of the muscle of the iris. The pupil is semidilated or widely dilated and it is often vertically oval. Because of the pressure of the contents of the eye on the sclera; the vortex veins which penetrate the sclera obliquely are pressed upon, and the circulation through them is impeded. This adds to the congestion. Similarly a great strain is thrown on the anterior penetrating veins, and consequently the waste products are dammed up in the tissues; the cornea cannot throw off its waste products easily, therefore it loses its luster. But this appearance of the cornea is uniform, not spotty, as in iritis or even in interstitial keratitis.

Often an iritis is the first sign of an interstitial keratitis. I well recall my utter embarrassment when I woke up to the fact that I had made such a mistake; yet it is not such a great blunder; indeed the ancients called interstitial keratitis "anterior uveitis," because the iris, ciliary body, and anterior choroid are usually associated in the corneal inflammation.

The characteristic development of spotty areas of infiltration gradually coalescing and within a few weeks becoming filled with tiny capillaries giving the salmon color tends to differentiate interstitial keratitis from all other lesions.

I have just recently had under observation a doctor who had pricked his finger with a pipette he was using in transferring cultures in the laboratory. A severe lymphangitis of the arm developed. A week after he seemed to have recovered an iritis developed. With it came also a very cloudy vitreous; when this finally cleared three patches of metastatic choroiditis were found.

We do not see so much metastatic choroiditis as formerly, due to the fact that the puerperal infections are rarer. But occasionally it is seen, especially after the acute infectious diseases, particularly chicken pox and scarlet fever.

The etiology. Last year a whole day was given to this subject by a group interested in research in ophthalmology. In this country, following the lead of Billings and his coworkers, we have emphasized focal infections. In Europe we have been criticized unmercifully, and ridiculed. But in Berlin last January I heard Doctor Krueckmann, one of the foremost professors of ophthalmology, himself a great specialist in tuberculosis of the eye, lecture to his class and show specimens; by lantern slide demonstrations and citations of case records he proved that iritis had a definite relationship to tonsillitis, infected dental apices, sinusitis, and other infected foci. He praised the Americans for their contribution. Later he showed me various organs of people who had had tuberculous eye disease and demonstrated the tubercles of these organs, either grossly or by showing the microscopic preparations from them.

Gonorrheal iritis seems to be on the wane. Possibly because we do not now consider that all prostatic infections are gonorrheal. Syphilitic iritis is also not so common now; possibly the greater publicity given to prophylaxis and to early treatment is a factor.

The mouth and nose probably contain the greatest causative factors of iritis. A gingivitis and a freely discharging sinus are not often associated with iritis but rather with conjunctivitis,

as the secretions escape easily, are not pent up, and do not have to be carried away by the blood stream. They are easily discharged, they infect the hands or handkerchiefs, and the infection by accident is carried to the conjunctiva. An iritis, however, is a blood borne disease (except in case of penetrating injuries). Therefore, the infections in enclosed cavities such as about an infected dental apex or in a small mouthed sinus or in a scarred tonsil are more apt to be associated with an iritis than with a conjunctivitis.

Often the Roentgen film gives us the only clue. We often find an infection at the apex of a dead tooth. Here the bone casts less shadow, and the normal contour lines of the peridental membrane are broken.

Of fully as great frequency we have found tonsils the cause. Usually the pillars are reddened. Often the tonsils have been in large part removed, but the stump is unhealthy in appearance, is easily inflamed, has cheesy secretions, etc., and is scarred.

The sinus infections associated with iritis are not those discharging profusely, but those having difficulty in discharging and those discharging periodically. Here Roentgen films are not of much help. A history of repeated colds or of postnasal discharge, or finding a malposition of the septum or of the turbinate or both will give a clue.

A case history will be illustrative: Mr. H. T., man 44 years of age, seen in September, 1925, with a history of chronic uveitis and a vitreous full of opacities. He had been under treatment for some six months, during which time every possible focus was investigated. The cause was finally pinned on an inactive, nonspecific prostatic infection, although he had had mucus occasionally drop down into the postnasal pharynx. Because of Roentgen ray examination of the sinuses having been negative the nose was ruled out as a causative factor. On examination by Dr. McGinnis a congestion of the postnasal mucosa was found, and on shrinking this a discharge was found to come from the region of the posterior ethmoidal cells. After a few weeks' treatment it was decided to drain these cells. This was done. Soon the ocular inflammation subsided, and there has been no recurrence in over five years. No evidence of clearing of the ocular inflammation occurred until after the infection in the nose was drained.

Having made the diagnosis, and having found the etiology, one may now proceed to the specific treatment. But one should not delay general treatment that long. Treatment should be started

the moment the diagnosis is made, and should proceed concurrently with the search for the etiology. Until one finds the etiological factor, the treatment must necessarily be general, i.e., it must be directed to a lessening of the inflammatory symptoms so that the complications will be minimum.

First and foremost, atropin in one per cent solution, one drop three times a day. This dilates the pupil, prevents synechiæ, or breaks them if they are only freshly formed, and prevents constant motion in the inflamed muscles of the iris and ciliary body. The eye should be kept closed for five minutes after the drop is instilled, to prevent its being winked down into the nose. Sometimes it is wise to use it oftener than three times a day for the first few hours. Seldom is a greater strength than one per cent justifiable.

The next step is to protect the eye from light by a shield. A bandage is unnecessary, in fact it is wise to allow air at the eye. Smoked glasses will protect the eyes yet will not interfere much with vision or with the normal exposure of the eye to the air. Often the use of the fellow eye is harmful. Not only is rest good for the eye but it is good for the body as well. Rest in bed is a cardinal principle.

Heat if properly applied is very gratifying and seems to be beneficial. The body itself increases the heat to the parts by bringing more blood and dilating the capillary bed. Heat is usually given by applying to the eye small towels about the size and thickness of a folded table napkin, wrung out of hot water; by using them of this size one can cover forehead, temple, and cheek as well as eye; *these should be changed every minute* as they rapidly lose their heat and soon begin to extract heat from the tissues themselves. These should be renewed every minute for fifteen or twenty minutes, and this repeated four times daily.

One general measure which we have found very efficient in increasing the heat and reducing the subjective and objective symptoms (although it seems at present to be under the ban), is the

foreign protein reaction, especially that from intravenous typhoid vaccine. It is not a curative any more than atropine or hot applications are curatives, but it does lessen the inflammation and thereby shortens the disease and reduces the complications. This is the opinion of nearly all who have used it in the early stages. It is much less useful after the inflammation is well established. I still think on this subject as I did when I reported my results before the American Medical Association in 1922. It must be given intravenously, so as to produce a chill and fever of 101.5 to 104 degrees, and it must be accompanied and followed up by orthodox treatment and thorough search for the cause. When the cause is found steps should be taken to remove it. The danger of anaphylaxis is so very slight as to be negligible, thereby differing from the use of diphtheria antitoxin. It is far better than milk and the proprietary preparations urged as a substitute. Its main advantage seems to be in the raising of the body temperature and the marshalling of Nature's forces for a frontal attack before the invading host is well entrenched. The dosage is usually one-twentieth to one-tenth of the initial immunizing dose, i.e., from 75 to 150 million bacilli.

In chronic cases fresh air, sunshine, good food, and rest are invaluable. In recurrent cases occasionally operative measures are advantageous.

The specific measures are necessarily directed against the causative agent once that is found. If it is syphilis or tuberculosis general combative and supportive treatment is necessary. I think one should be on his guard against assuming that an iritis is syphilitic if a positive Wassermann is found until other factors are ruled out. Having found one possible etiological factor must not deter us from further search, as the first factor may be only coincident. Having satisfied ourselves by a thorough examination that all factors have been found, we proceed to eliminate them as rapidly as is expedient.



CONGENITAL DIAPHRAGMATIC HERNIA. A REPORT OF A SUCCESSFUL OPERATION AT SEVEN WEEKS OF AGE

BY EDWIN F. ROBB, M. D.

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In a very excellent review of the literature from 1912 to 1929, Greenwald and Steiner¹ found only eighty-two cases of diaphragmatic hernia, recorded in children under ten years of age. Thirteen of these were stillborn and a majority of the remainder lived from a few hours to a few days only, death in many cases being due to aspiration pneumonia. Six of the eighty-two cases had been diagnosed clinically, twenty-one by X-ray, forty-seven at autopsy, four at operation and four were unaccounted for. Of this series, eleven cases were operated upon with five recoveries and four of the successful operations were in children over one year of age.



PLATE NO. 1

Since the publication of Greenwald and Steiner's paper, R. S. Bettman and J. H. Hess² report a case successfully operated on in an infant three and one-half months of age. The accompanying case report is that of an infant of seven weeks, successfully operated upon by Dr. O. S. Wyatt³. We believe this to be the youngest such case on record.

From the large percentage of these cases that are diagnosed at autopsy, or when some catastrophe such as a strangulated bowel has occurred, it is apparent that we not only fail to make the diagnosis, but seldom even consider it as a possible cause of the indefinite respiratory and digestive disturbances seen in infants. Since this was true in my case, I wish before presenting the case report, to call attention to a few of the more important points regarding congenital diaphragmatic hernia, with the hope that more of these infants will receive the benefits that are sure to accrue from an early diagnosis.

Whether a diaphragmatic hernia is true or false, is probably of little importance. The size, location, organs involved, and the symptoms produced are, however, of extreme importance. As Soresi⁴ has pointed out, many diaphragmatic hernias are small enough to go through life without symptoms and are found accidentally during abdominal operations for other conditions, or the defect may vary in size up to a complete absence of one side of the diaphragm. Hernias most frequently occur through the posterior pleuro-peritoneal passages, and are much more frequent on the left side than on the right, due no doubt to the protective action of the liver. The stomach and bowel are the most commonly involved organs, but Grulee⁵ states that every abdominal organ except the bladder, rectum, and genitalia may be found in diaphragmatic hernia. The symptoms therefore vary with the organs involved and the degree of involvement, so that they may be entirely absent or very marked, and may easily be confused with other conditions, such as congenital heart disease, atelectasis of the lungs, intestinal obstruction, acidosis, pyloric stenosis, gastric ulcer, intracranial hemorrhage, diverticulitis of the esophagus, etc.



PLATE NO. 2

In adults and older children, abdominal symptoms, such as pain in the epigastrium after eating, and sudden vomiting are most pronounced. In infants and younger children, thoracic symptoms, cyanosis, varying degrees of respiratory difficulty and a peculiar weak cry are most frequent, being due largely to mechanical interference with the heart and lung action by the abdominal organs that have passed through the hernia into the chest cavity. Since the stomach and bowel are the most commonly herniated organs, cyanosis and respiratory difficulty are increased by eating, unless only the stomach is involved and this but partially occluded, when vomiting may be the only symptom. Complete strangulation of the stomach or bowel may occur at any time, with characteristic symptoms, or if the defect in the diaphragm is sufficiently large, all symptoms may at times be made to disappear by holding the infant in an upright position, allowing the abdominal organs to return to their normal location. Physical signs, likewise, vary with the

number and extent of the organs involved and may completely disappear with spontaneous reduction of the herniated organs. When, however, any considerable amount of stomach or bowel is in the thoracic cavity, the heart is crowded to the right. This is such a constant finding that Grulee⁵ has stated that every case of dextrocardia should be suspected of being due to diaphragmatic hernia. Diminution or absence of breath sounds, dullness or tympanic notes on percussion, gurgling sounds in the thoracic cavity, retraction of the abdomen are frequently noted.

From the very small percentage of clinical diagnoses made, however, it is obvious that proper interpretation of these signs in infants, is difficult and that X-ray studies offer the best method for an early diagnosis. These should be carefully made and the following chances of error considered:

1. If the opening in the diaphragm is small or if the hernia is reduced at the time



PLATE NO. 3



PLATE NO. 4

of X-ray, the plate may appear to be entirely normal.

2. If barium is not used, the herniated bowel may produce pictures closely resembling other pathological conditions.
3. If the herniated organ is a solid organ, such as spleen, omentum, etc., it may be invisible.
4. If a complete obstruction exists, barium may not pass through the herniated bowel.

Diaphragmatic hernia may, as in Stimson's⁶ case, show a tendency to spontaneous cure, and the operative risk is definitely less in older children, but the danger of some complication, such as a complete obstruction of the bowel is constantly present. Where symptoms are pronounced or where no improvement can be noted, surgical intervention should be resorted to regardless of age.

CASE REPORT. Baby R. S. Male infant, was first seen when six weeks of age, weighing eleven pounds, ten and one-fourth ounces. Birth history and family history were negative, the birth weight being ten pounds six ounces. The mother stated that the baby had had a weak cry since birth, and brought the baby for examination because of some difficulty in breathing and because he choked at his nursings. The choking and difficulty in breathing seemed to be getting slightly worse; cyanosis had been present only in a slight degree; the temperature was normal.

Physical examination revealed a well developed and nourished child, but pale, and with a short, jerky type of respiration. Breath sounds were diminished and fine râles were heard over the entire chest, except the extreme lower left lobe. Otherwise, physical findings were entirely normal.

X-ray plate No. 1 was taken and incorrectly interpreted as an extensive atelectasis with emphysema of the lower left lobe. A blood Wassermann was taken and the mother instructed



PLATE NO. 5



PLATE NO. 6

to cut down the feedings and induce crying. Improvement was both rapid and marked. Plate No. 2 taken one week later showed considerable air in the lung fields. Twenty-four hours later, however, the patient's condition became much

worse and he was brought to the hospital in a semiconscious condition. The true condition was still unsuspected and a bronchoscopic examination was done with the thought that some obstruction might exist in the upper respiratory tract. The baby ceased to breathe during this examination and a pulmotor was put into action. After respiration had been reestablished, it was suddenly noted that the abdomen was markedly distended; the distension promptly disappeared upon pressure and the correct diagnosis was forced upon us. Barium enemas were then given and after several attempts, barium was forced through the herniated bowel, as shown in plates three and four.

The patient was operated upon at once by Dr. O. S. Wyatt³, who chose the abdominal route. An opening 4 cm. in diameter was found in the posterior part of the left diaphragm. The stomach was found in the abdominal cavity, but almost the entire small bowel and all the large bowel, except the descending colon, was found in the thoracic cavity. The bowel was returned to the abdominal cavity by gentle traction and the opening closed.

The baby was strapped to a frame and the head elevated to a forty-five degree angle. Recovery was rapid and uneventful. Subsequent plates five and six show no evidence of any recurrence of the hernia and the patient, now eleven months of age, weighs twenty-four pounds and is apparently in perfect health.

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OBSERVATIONS ON THE RELIEF OF PAIN IN LABOR AND THE TREATMENT OF NAUSEA AND SLEEPLESSNESS IN PREGNANCY

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INTRODUCTION

INTRODUCTION

Pain presents peculiar problems to the obstetrician. With the thought of comfort to his patient in mind, he must also consider the safety of the baby; with a wide choice of analgesic and anesthetic agents at his disposal, it is important that he should constantly remember that the perfect analgesic or anesthetic agent has not yet been discovered. At the present time a combination of drugs seems to possess advantages over single agents in labor. This combination will first be considered.

ORDINARY TECHNIQUE IN AVERAGE
NORMAL LABOR

When the patient begins to complain of pain in labor she is given pantopon, 0.011 gram and scopolamine stable (Roche) 0.00066 gram by hypodermic. The room is darkened and all unnecessary manipulation of the patient is prohibited. From forty-five minutes to one hour after the above injection she is given scopolamine stable (Roche) 0.00066 to 0.00033 gram by hypodermic, depending upon her reaction to the first injection. At intervals of from one to two hours thereafter she is given scopolamine stable (Roche) 0.00033 gram by hypodermic until the first stage is well advanced.

At this time sodium amytal or nembutal 0.5 gram is given in 5 c.c. of sterile distilled water intramuscularly into the deltoid region or sodium amytal in from 0.5 to 1 gram doses or nembutal in 0.5 gram doses is given in 90 c.c. of warm water as a retention enema. This produces a condition bordering on obstetric anesthesia in from twenty to thirty minutes and its effect persists for from one to two hours. I have found many instances where delivery is effected without the aid of any inhalation anesthetic, though usually nitrous oxide-oxygen or ethylene-oxygen are added for the actual delivery.

UNSATISFACTORY MODIFICATIONS OF THE ABOVE
TECHNIQUE IN AVERAGE NORMAL LABORS

I. The intravenous administration of 0.5 to 1 gram of sodium amytal or the intravenous administration of 0.5 gram of nembutal. Even at

the recommended rate of injection of 1 c.c. per minute of a ten per cent solution of either of these drugs, the effect is too abrupt and anesthesia, rather than analgesia, is produced. If given early in labor the contractions frequently cease. If given in the second stage, larger doses are required to secure sedation and one frequently finds himself with a patient who, clinically, is under a general anesthetic, the effect of which he cannot terminate.

II. The use of the barbiturates followed by morphine.—Clinically the barbiturates and morphine are known to be respiratory depressants. I have never seen evidence of asphyxia neonatorum in cases where the mother has been given barbiturates alone in labor, nor in cases where scopolamine and the barbiturates have been used, but I have seen instances where babies have been cyanotic at birth and have remained so for several hours, following the administration of even 0.008 gram of morphine to the mother, after she had been given an initial dose of some barbiturate earlier in labor.

It is a well known clinical fact in surgery that the surest way to quiet the postoperative restlessness of a patient who has had a preoperative dose of a barbiturate is to give a small dose of morphine. This cannot be done with impunity in labor. There should be a wide spacing of these drugs in the interests of the baby.

The barbiturates seem to hasten the softening and dilatation of the cervix when used in doses not exceeding 0.5 gram, orally, intramuscularly or by rectum. If the use of morphine is contemplated during labor it should be given first, not within three hours of the expected birth, and the dose should not exceed 0.008 gram.

III. The use of the barbiturates as the exclusive analgesic and anesthetic agents throughout labor. My experience has been that the dosage required is too large to warrant this procedure. One must give almost a depressant dose to produce sufficient anesthesia. The anesthesia produced is not controllable. As a basic analgesic or anesthetic the barbiturates have an important

place in obstetrics, but they should not be used as the exclusive anesthetic agent.

MODIFICATION IN TECHNIQUE IN ABNORMAL LABORS

I. The occiput posterior position. In those patients with this abnormal position who so frequently complain of a distressing backache early in labor, a preliminary hypodermic of pantopon, 0.011 gram, followed in thirty minutes by sodium amytal, 0.396 gram or by nembutal, 0.198 gram by mouth, gives gratifying results. It produces analgesia, and sometimes amnesia, and conserves the patient's strength without stopping labor. Softening and dilatation of the cervix seem to be hastened. I have used the barbiturates mentioned without pantopon, but the results have not been as good. Scopolamine is used when labor is well established.

II. Breech labors. My best results have been obtained with a technique similar to that employed in occiput posterior positions.

ELECTIVE CESAREAN SECTIONS

The barbiturates act ideally as the basic anesthetic. Dosage sufficient to insure eight to ten hours sleep is given by mouth the night before operation and half the night dose is given in the early morning, three hours before the patient goes to surgery. Ethylene-oxygen is the general anesthetic of choice. The patients sleep most of the day of operation and abdominal pain is rare. Restlessness is rarely troublesome. When pain does occur it is readily controlled by codeine sulphate in from 0.033 to 0.066 gram doses by hypodermic.

THE BARBITURATES IN ECLAMPSIA

In my opinion an imminent or actual eclamptic seizure offers the one indication for the use of the barbiturates intravenously in obstetrics. Their action is definite, prompt, and gratifying. I have not found that the element of hypertension is a contraindication, but the injection must be made slowly or the preliminary drop in blood pressure may prove excessive. The dosage of sodium amytal is from 0.5 to 1 gram and of nembutal, 0.5 gram and the rate of injection must not exceed 1 c.c. per minute.

My practice is to follow the injection of the barbiturate with 1000 c.c. of a ten per cent dex-

trose solution intravenously, and I have noted a better therapeutic response to the dextrose solution when it is preceded by the intravenous injection of one of the barbiturates named.

USE OF THE BARBITURATES IN OTHER CONDITIONS INCIDENT TO PREGNANCY AND LABOR

I have observed repeatedly that multiparous patients who have had sodium amytal or nembutal during labor suffer much less from afterpains than those not so treated. Patients who have had 0.5 gram intramuscularly or by rectum of either of these drugs during labor sleep for most of the first postpartum day, though they awaken for meals or when spoken to and are fully coöperative. The analgesic effect as to afterpains has been sufficient in many cases for as long as thirty-six hours after labor.

In the nausea and vomiting of early pregnancy, when the exhibition of bromides causes distress, I have found nembutal in 0.033 gram doses by mouth, fifteen minutes before meals, very efficacious.

During the later months of pregnancy, when the mother is kept awake because of her own discomfort or the hyperactivity of the child, a dose of sodium amytal, 0.198 to 0.396 gram or nembutal, 0.099 to 0.198 gram by mouth at bedtime acts as a sedative to the baby and as a hypnotic to the mother.

SUMMARY

1. The combination of the barbiturates intramuscularly or by rectum with pantopon and scopolamine by hyperdermic gives a splendid amnesic and analgesic effect in labor though it is not used to the exclusion of a general anesthetic late in the second stage.

2. The barbiturates should not be used as the exclusive anesthetic agents in labor.

3. The intravenous use of the barbiturates in obstetrics should be restricted to preëclamptic toxemia or to eclampsia.

4. In the nausea and vomiting of pregnancy, or in the insomnia of late pregnancy the barbiturates in small doses have a prompt and gratifying effect.



HOSPITAL OBJECTIVES

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When we learn that the hospitals of this country represent an investment of more than three billion dollars and that the annual operating costs are rapidly approaching the billion dollar mark, it is time to stop and ponder over the points and purposes toward which this industry is directed. These objectives have been defined as follows:

1. The care of the sick.
2. The education and training of doctors, nurses, attendants, and others.
3. Promotion of research.
4. Education of the public in matters of health.

CARE OF THE SICK

The only excuse for the existence of the hospital is the patient. Such a statement seems trite, and yet I sometimes wonder if it will ever be sufficiently emphasized. In the Middle Ages economic necessity demanded the construction of hospitals as havens of refuge for the undesirable, the unwanted, the useless, the repulsive, and the destitute, made so largely through sickness. Such segregation made possible the care of these classes at low cost with a minimum expenditure of energy. The sick were considered unclean and were hospitalized in the interests of the well. Judging from the fragmentary descriptions and sketches which have been handed down to us, a low percentage of bed occupancy did not trouble our mediaeval friends, as the figure usually averaged about 500 per cent. Certainly the care of the sick was not the governing motive of these hospitals. Christianity did much to change these conditions when it routed superstition and demanded of its adherents that they visit the sick, and made such visiting a tenet of the faith and a rigid obligation of its followers.

As knowledge of, and attitude toward, the problem presented by the sick changed, the hospital came to be recognized as a thing possessed of great possibilities for the preservation of health. Its aims and purposes changed and a tremendous growth ensued. The last hospital number of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION listed 6,719 hospitals in the United States,

which rendered 278,634,430 days of treatment in 1930. This is the equivalent of treating one patient continuously for 763,382 years. These hospitals were divided into two groups, governmental and nongovernmental. The factors entering into the establishment of the first group are economic necessity, education, and politics, whereas the dominating influences in the second group are altruism, religion, financial gain, and, to a considerable extent, education. Can the motives in which hospitals find their origin be completely overshadowed by the primary motive which we have defined for hospitals, namely, the care of the sick?

Proper and adequate care of the sick is difficult of definition. Considering the present limitations of our knowledge and ability, it is overdone rather than underdone, and the fault lies with the patient and his relatives rather than with his doctors. Most laymen are very primitive in the presence of sickness or injury. They insist that something be done even if it is exactly the wrong thing to do. A sophomore in a medical school who worked as an attendant in one of the hospitals appeared in class one morning looking worried and worn. Asked for an explanation, he told of a harrowing experience of the night before. One of the patients had complained loudly to him of a very severe pain in one of his thighs, whereupon the student decided that something had to be done immediately, so he seized the member and proceeded with a vigorous massage. The patient died in the midst of it from embolism.

At another time a man came to the receiving department of a hospital about midnight saying that he had taken a half teaspoonful of tincture of iodine by mistake. The doctor in charge told him to forget about it and take the right medicine next time. He insisted that something be done, so preparations were made to wash out his stomach. When the tube was halfway down, the patient decided that he didn't need treatment. Unfortunately much of our treatment has to be in the form of placebos, part of the time because of the insistence of the patient, more often because of the demands of the relatives.

*Presented by invitation before the Lymanhurst Medical Staff on April 28, 1931.

Hospital care to the average layman is an endless procession of bed baths, needles, tests, whispermings, bed pans, and white uniforms, with an occasional trip to a torture chamber of one kind or another. There is a good and sufficient reason for the procedures which are undertaken in hospitals, but it is difficult to make patients and their relatives understand them.

I once overheard one of our internes explaining the illness of a mother to her grown daughter. After two or three repetitions of what seemed to me a clear cut explanation in simple terms, the daughter was still dissatisfied. The interne became disgusted and said, "See here, madam, it has taken me seven years to learn what little I know about medicine, and neither one of us is smart enough to permit my giving you a medical course in ten minutes."

An explanation presupposes at least ordinary intelligence. Let me recall another incident. A prominent St. Paul club woman came to me one day with the story that she was to address a gathering of women on the subject, "The Ancker Hospital." She asked me what classes of patients we cared for, and I explained to her that we accepted residents of Ramsey County who were unable to pay the costs of private hospitalization and treatment, emergency cases, and Workmen's Compensation cases for whose care the city or county were legally liable. I then proceeded to explain in great detail the nature of Workmen's Compensation cases. To illustrate, I took for an example a policeman directing traffic on a busy downtown corner, telling her that if a car should strike him while he was thus engaged he would be entitled to compensation for his injuries and to hospital care, for the reason that he was a city employee who was injured in line of duty. Just to make certain I wouldn't be misquoted I asked her to review for me the facts which I had given her. She said that she understood perfectly and recited the detail of the classes of patients admitted as follows: "The Ancker Hospital accepts residents of Ramsey County who are unable to pay the costs of private hospitalization and treatment, emergency cases and the policemen who are hurt on the corner." Imagine trying to explain to that woman the nature of coronary thrombosis.

These incidents serve to illustrate some of the difficulties that arise in connection with any effort to work toward the primary objective of the hospital "the care of the sick." What is the care of the sick? Who shall define it? Who shall be the judge of adequate and of inadequate care? Who shall say when the hospital is attaining its

primary objective? Is that objective intangible? Is it attainable?

The greatest single force at work in an effort to answer the above questions is the standardization program of the American College of Surgeons. This program is not satisfactory in all of its details, perhaps, but up to this time it has done more to make hospitals safe places in which to be sick, than has any other single influence operating in the field.

The whole problem is so complex, however, that it will never be solved by a single influence. The properly organized coöperative effort of all groups interested, including the general public, may eventually formulate a more rational program than the one now operative.

EDUCATION

The second objective is the education and training of doctors, nurses, attendants, etc. In the United States the surface has hardly been scratched so far as the educational possibilities of hospitals are concerned. We are inclined to think of teaching hospitals as those connected with medical schools, neglecting the teaching influence which might be exerted by any and all of our 6,719 hospitals. Medicine is essentially an intellectual pursuit, and every graduate should find the stimulus which he needs for study in the hospitals with which he is connected. The hospitals should return to their sponsors, in exchange for the material assistance given, a better general level of medical practice. The further training of men already in practice should be the greatest educational obligation of the hospital.

The medical student busies himself gathering more or less isolated facts. He is kept "on his toes" by the demands of the faculty and by competition with fellow students. His thinking is of the inductive type. In the hospital and in practice all is different. He must actualize himself through his own efforts. His stimulus must come from the acceptance of great responsibilities which he must measure up to or fail. He must learn to think independently and correctly. He must change over gradually from the inductive type of reasoning to the deductive type. The importance of the mission of the hospital in initiating this transition is perhaps not sufficiently stressed. Responsibilities of the interne must be increased as rapidly as he is able to absorb them. Supervision is always essential at all times, but it may well be inconspicuous. Moderate skepticism, healthy scientific curiosity, and a goodly supply of imagination are qualities worth cultivating.

Sir James Mackenzie became a great heart specialist because he studied life histories of

disease. He saw his patients first as children with chorea or rheumatic fever, and followed them through all of the sequelae in later years. There is a fear in the minds of some that the age of specialization in medicine is tending to encourage the study of cross sections of disease and that medical progress will be interrupted until this tendency is corrected. If there is any foundation for this fear the fault lies with the medical profession. In the large modern hospital it is possible to see in one day material equivalent in amount to that seen by Mackenzie in five or ten years, but are we doing it? Wouldn't it be well to keep this point uppermost in the minds of our interne groups?

In the matter of training and educating nurses, one is almost led to believe, in the light of recent developments, that we have been overzealous. As a result of the uneasiness over the nursing situation, our efforts of the future may be directed toward the production of quality rather than quantity in the nursing profession. This is merely a repetition of the history of medical education.

The fact must not be overlooked that the educational obligations of hospitals do not end with doctors and nurses. Hospital executives, social service workers, dietitians, clinical laboratory and X-ray technicians, occupational therapists, physiotherapists, medical artists, photographers, librarians, historians, record clerks, statisticians, orderlies and others must look to the hospital for a considerable portion of their training.

RESEARCH

The third objective is the encouragement and development of research. The character of their work makes hospitals the only suitable laboratories for certain types of research. In any discussion of hospital problems the question always arises as to what is and what is not properly

chargeable to hospital expense. A good record system is indispensable to a well organized hospital and it is incidentally the foundation for clinical research. I am not convinced, however, that other forms of medical research are a proper charge against the incapacitated, which is the portion of the population least able to bear the expense.

PUBLIC ENLIGHTENMENT

The fourth and last objective is the education of the public in matters of health. This is a joint problem of all health agencies. The rôle of the hospital in this program has not been definitely defined. National Hospital Day activities possess certain educational features. Some institutions are encouraging health audits or periodical health examinations by permitting the use of their facilities by doctors for these purposes. Publications featuring health news are being sponsored. Prophylaxis against certain diseases is stressed. Much remains to be done with this important assignment.

CONCLUSIONS

These in brief are the present day aims of hospitals. They are rational and attainable and a certain amount of progress along the lines indicated is being made. However, with the American Medical Association airing its views in Detroit, the American College of Surgeons doing the same in Philadelphia, the American College of Physicians expressing its ideas in San Francisco, and the American Hospital Association reporting from New Orleans, dismemberment of the American Hospital is inevitable. The hospital problem is big enough for all, and results will begin to come rapidly when the various groups interested decide that their common interests will be best served by pooling their resources and working together toward the objectives outlined.



This is the twelfth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

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LUNGS TRACHEA BRONCHI (Cont.)

I. Pulmonary Tuberculosis

1. Value of Roentgen examination.

- a. If symptoms due to pulmonary tuberculosis are present there should always be abnormal X-ray findings in the lungs.
- b. Negative Roentgen examination is the most conclusive evidence of the absence of tuberculosis of the lungs.
- c. Next to a positive sputum, characteristic X-ray findings are the most positive sign of pulmonary tuberculosis.
- d. In many cases, X-ray evidence of pathology in the lungs may be present but the tuberculous character may be doubtful, and must be decided by repeated examination or other methods of examination.
- e. The presence of X-ray signs does not necessarily mean an active lesion. In some cases activity can be determined from Roentgen examination, in others quiescence or healed lesions may be determined; in many cases no opinion as to the activity of a lesion can be formed by this means.
- f. The extent, character, location of the disease can be accurately determined.
- g. The progress of the condition can be followed by repeated films.
- h. Information as to the efficacy of treatment, as to introduction of procedures such as pneumothorax can be obtained.

2. Technical considerations.

- a. Fluoroscopic examination must not be relied upon for the diagnosis of early tuberculosis, although it may be helpful and may be superior to physical examination.
- b. Stereoscopic films of the best technical quality are imperative.

3. Roentgen terminology in relation to tuberculosis.

- a. Anatomical divisions of the lung into apex, subclavicular and basal regions referring to the proximo-distal diameter of the lungs; inner, middle and outer zones re-

ferring to the medio-lateral diameter of the lungs.

- b. Location referred to in relation to the vascular trunks: the vertebral passing up along the lateral side of the spine into the apex; first, second, and third interspace trunks passing into these anterior interspaces; distal trunks passing into the base.
- c. Classification as to involvement: incipient down to the second rib anterior on either or both sides without cavitation; moderately advanced below this or with small cavities; far advanced involving more than one whole lobe or with larger cavities.

4. Primary tuberculosis in children.

a. Findings.

- (1) May get a small area of density, usually sub-pleural resembling broncho-pneumonia. Varies in size and location.
- (2) Associated with it, there is usually enlargement of the tracheo-bronchial glands draining its region. These are shown as lobulated masses of density in the hilum.
- (3) This parenchymal lesion may rapidly grow smaller, fibrose, producing irregular areas of bands of density, or calcify producing a rounded, very dense shadow in the periphery of the lung, often very small. The hilum glands may remain as dense shadows irregular in outline, or may calcify also giving a very marked density or stippled non-homogeneous character.
- (4) May get an acute pneumonia, rapidly spreading, rarely producing cavities, usually exitus supervening before cavitation occurs.
- (5) Occasionally in older children may get an adult form of tuberculosis.
- (6) Tuberculosis of lymph nodes may be so out of proportion to parenchymal lesion as to seem to be the primary

focus. The enlargements are most common in the superior mediastinum, may be bilateral. Around the outer margins of the glands, there may be marked dilation of the vascular markings due to pressure and resembling infiltration. Occasionally an infiltration into the lung field occurs from the glands, and they then lose their sharp contour and cannot be separated from the lung lesion.

5. *Types of chronic adult tuberculosis.*

- a. Exudative type—active, caseating, pneumonic types give diffuse, hazy, feathery densities not sharply defined.
- b. Productive type—fibrosing, healing, give hard, very dense, discrete, sharply defined nodules or dense, coarse, discrete bands.
- c. Fibrotic and fibroid—usually healing or healed, give the dense, coarse, bands running to the hilum. Most cases show mixtures of all three types.
- d. Caseating gives very dense shadows and shortly cavitation within.
- e. Cavitation gives decreased density, often rounded but may be ragged in outline, loss of lung markings within and a capsule of increased density about it.
- e. Cavitation gives decreased density, often rounded but may be ragged in outline, loss of lung markings within and a capsule of increased density about it.
- f. Pneumonic—resemble either lobar or broncho-pneumonia.
- g. Calcification—stippled, irregular, non-homogeneous, extremely dense areas usually representing healed lesions. The characteristic feature of moderately or far advanced tuberculosis is the multiplicity and multiformity of the lesions, different aged lesions always being represented. This is not in sharp contrast to the acute pulmonary conditions and to most other chronic conditions of the lungs. Almost always more than one of the above types of tuberculous lesions are present in the moderately advanced case.

6. *Incipient adult tuberculosis.*

- a. First infection usually subclavicular.
- b. Appears either as a triangular shadow of increased density at the periphery, a hazy appearance, a mottled area, or distinct rounded or oval nodular areas of density can be seen.
- c. "Drainage band," a series of dense streaks along the vascular trunks from the pe-

ripheral density to the hilum can be seen.

- d. Then extension to the apex occurs, the shadows usually being of the "streaked" type suggesting fibrosis.
- e. Frequently a pneumonic appearance is present, the shadow being less dense than a true consolidation and it is due to "collateral inflammation."
- f. Fluoroscopically, decreased aeration and decreased movement of the diaphragm on the involved side may be seen.

7. *Moderately advanced.*

This shows more variety of lesions than the incipient, may have small cavities and often has marked pleurisies associated. It extends below the second rib.

8. *Far advanced.*

The cavities are larger, areas of pneumonia are present, and almost all the forms of tuberculosis may be represented. Often the presence of collateral inflammation may produce the picture of a far advanced case when in fact the actual tuberculous infiltration is small. Far advanced cases in which the purely fibrotic or productive type of lesion is present may, however, be seen. In these cases the other findings of chronic lung fibrosis may be present.

9. *Cavities.*

- a. If very small or deeply situated often missed clinically.
- b. Usually in the upper lobes, frequently multiple.
- c. May be annular shadows, a thin dense line surrounding a circular area of lessened density. Some of these annular shadows are subpleural emphysema or bullae in the inter-lobar pleura. Cavities are usually set in an area of density, can be seen stereoscopically to be within the lung itself, and do not change as much from time to time.
- d. Often a ragged irregular area of lessened density within a consolidation and these usually are rapid cavitations.
- e. Cavities often adherent to the peripheral pleural.
- f. A solitary cavity, especially if in the lower lobes, usually not tuberculous.

10. *Acute forms of tuberculosis.*

- a. Disseminated.
Coarse, small fairly dense shadows scattered along the vascular trunks in either one lobe, one lung, or lobes of both lungs. A large lesion is always found as the source of the bronchial dissemination.
- b. New lesion—a "spread."

Usually in the upper portion of the lower lobe, a soft, hazy, poorly defined density with the older lesions above it.

c. Acute military tuberculosis.

"Snowstorm" appearance, giving extremely numerous, very small, fine densities, scattered very homogeneously throughout both lungs and often showing no other lesion. The lesions may be fairly discrete and show no particular relationship to the broncho-vascular trunks. Must be distinguished from bronchiolitis and pulmonary congestion.

d. Tuberculous pneumonia.

(1) Broncho-pneumonia gives irregular areas of density similar to non-tuberculous type.

(2) Lobar pneumonia is usually not so well defined, but in its early stages may be indistinguishable from ordinary form. Can be determined only by presence of other tuberculous lesions or by lack of resolution. Presence of other lesions however does not necessarily mean the lobar pneumonia is tuberculous. Tuberculous pneumonias are most commonly in the upper lobes.

Cavitation appears within the consolidation if resolution begins to take place.

11. *Unusual forms of tuberculosis.*

a. Hilum tuberculosis—increased density about the hilum glands without parenchymal lesions—rare in adults.

b. Basal tuberculosis, a primary lesion in the lower portions of the lungs of adults and difficult to distinguish from broncho-pneumonia, bronchiectasis, lung abscess. It is pneumonic in form and usually rapidly progressive.

c. Solitary cavity without other lesions resembles pulmonary abscess.

12. *Healing process and healed lesions.*

a. Fibrosis.

An increase in the dense streaks or bands with contradiction of the lobe occurs. The trachea may be retracted toward the side of the lesion as may be the whole mediastinum. A lobe may become much smaller with compensatory emphysema of the remainder of the lung or the other lung and retraction of the diaphragm upward. This is well shown on the right side where the thickened interlobar septum may identify the lower margin of the upper lobe and it can be seen moving up-

ward often coming almost to the clavicle as contraction occurs.

b. Calcification.

Gives irregular, stippled, non-homogeneous densities similar in degree to that of bone, and often set in the midst of fibrous tissue bands.

c. Absorption.

Marked absorption of tuberculous infiltrations may be shown but usually some residue of fibrosis or calcification can be identified. Remarkable absorption of the feathery masses characteristic of collateral inflammation may be demonstrated.

J. Tumors of the Lung

1. *Primary*—most commonly bronchogenic carcinoma but others occur.

a. Bronchogenic carcinoma.

(1) Arises as dense mass near hilum extending out from a bronchus.

(2) May extend into lung as radiating streaks of densities along vascular tree or as a massive density involving a whole lobe.

(3) Often stenose bronchus—can be diagnosed by lipiodol injections.

(4) May thus produce atelectasis of a whole lobe giving same signs as described under atelectases.

(5) Pleura is involved early, often producing effusion, and thus covering up original tumor which may not be made out.

(6) Metastases to other lung may give similar appearance to all carcinomatous metastases.

(7) Differential diagnosis is difficult. Confused with resolving pneumonia, pulmonary infarcts, lung abscess.

b. Lobar or alveolar carcinoma—very rare.

Gives a dense consolidation involving one lobe closely resembling a lobar pneumonia without the symptoms.

c. Sarcoma—rare.

Gives a very massive dense shadow. The diagnosis can hardly be made from X-ray examination.

All primary lung tumors usually displace the mediastinum toward the opposite side. With atelectasis complicating, however, the reverse may occur.

2. *Metastases.* Much more common than primary tumors.

As the lungs are one of the common locations of silent metastases, Roentgen examinations should always be made, especially in cases of

carcinoma of the breast and osteogenic sarcoma.

a. Carcinomatous.

- (1) Begin as small rounded or irregular dense shadows.
- (2) These become larger and more numerous very quickly.
- (3) They are more common in the lower lobes.
- (4) In case of breast carcinoma the metastases may begin in the hilum producing a marked enlargement and then may spread out into the lung field as a series of dense bands radiating along the vascular markings and resembling an extreme form of pulmonary congestion or fibrosis.
- (5) Pleural involvement with thickening and effusion is common.
- (6) In metastases from carcinoma of the prostate the nodules may resemble bone in their density.
- (7) Metastases to the ribs may also be present but not necessarily so.

b. Hypernephroma.

These tend to produce somewhat rounder more discrete shadows.

c. Sarcoma.

The shadows are very round, very discrete, and very numerous.

d. Testicular tumors.

These produce extremely large, somewhat oval shaped, very discrete shadows which give the appearance of having no relationship to the lung tissue itself.

e. Hodgkin's disease and lymphosarcoma.

Invasion of the lung occasionally occurs and the appearance may simulate carcinomatous metastases.

3. *Value of X-ray examination.*

- a. In the primary tumors the presence of the pathological process and its extent may be determined by Roentgen examination but the exact diagnosis is frequently better made by other methods.
- b. In the metastatic lesions the Roentgen findings are usually present before there is any other evidence of the process. The Roentgen examination is therefore extremely important.

K. *Iodized Oil in Pulmonary Diagnosis*

1. *Method of introduction.*

15 to 20 cc. of a 40 per cent suspension of iodine in oil (Lipiodol, Iodipin) is injected into the trachea by a variety of means. The simplest is to anesthetize the larynx and

pharynx and have the patient swallow it. This is not always successful. Injection through the laryngoscope is more constant. This should be done under fluoroscopic control and the patient is put into a suitable position in order to fill that portion of the bronchial tree which it is desired to visualize. Stereoscopic postero-anterior and lateral films are then made.

2. *Purposes of the method.*

The oil is rendered opaque to X-rays by the incorporation of the heavy iodine. The tracheo-bronchial tree can thus be rendered fully visible. Bronchiectatic cavities, abscess cavities, and rarely tuberculous cavities can be filled with the oil, their number, size and location made out. Changes in the bronchi such as narrowing, dilation, stenosis, tumor can be clearly seen.

3. *Normal findings.*

- a. The oil tends to coat the walls of the trachea and bronchi so they can be clearly visualized and the lumen of the bronchus, being filled with air, will appear in sharp contrast.
- b. Coughing produces an expulsion of the opaque substance into the alveoli of the lungs giving a diffuse mottled density throughout the lung field which has been injected. Coughing should be avoided as this mottling covers up the bronchi and may hide pathology. Furthermore, the oil absorbs very slowly from the alveoli so the dense mottling may remain for a long period of time.
- c. The course of the bronchi behind the heart and below the domes of the diaphragms, ordinarily invisible, is clearly made out because the density of the opaque substance is greater than that of the heart or sub-diaphragmatic structures.
- d. The bronchi are made out as broad structures near the hilum becoming narrower as they approach the periphery.

4. *Pathological findings.*

- a. Stenosis or tumor of a bronchus may produce obstructions and the shadow be sharply cut off in the proximal portion of the bronchus.
- b. Dilation of the bronchi can be made out by their broader lumen.
- c. Bronchiectatic cavities appear as rounded, irregular, or oval-shaped densities, usually in the lower lobes. They may be visualized behind the heart or below the domes of the diaphragms. Often they give the appearance of a bunch of grapes on a stem. The

- heavy bronchial shadows leading to them are characteristic.
- d. The shadows of two bronchi superimposed upon each other must be ruled out by the lateral view.
 - e. Abscess cavities may appear as a large mass of density of irregular outline. They sometimes fail to fill with the oil.
 - f. Tuberculous cavities usually do not permit the oil to enter.
 - g. Areas of fibrosis in the lung may not be filled with the opaque suspension.
5. *Deleterious effects.*
- a. Usually no harm is done to the respiratory structures, although the possibility of re-activation of tuberculosis must be considered.
 - b. The aspiration or swallowing of the oil into the stomach may produce symptoms of iodism if sufficiently large in quantity. The stomach should be washed out if too much has been swallowed.
 - c. The opaque substance may remain in the lung for long periods of time especially in the bronchiectatic cavities.
 - d. Entrance of the oil into the alveoli may produce a mottled density remaining for long periods of time. This may simulate pathological conditions in the lung and should be considered in X-ray diagnosis of the lungs if iodized oil has previously been given. In many cases X-ray diagnosis of pulmonary condition is impossible for a year or more after the injection of iodized oil.

(To be Continued)

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—31—336.

A white man, age 67, was admitted to hospital February 12, 1931. He had been well until two months ago except for arthritis in both hips which he had had for the past sixteen years. About two months ago he first noticed edema of the ankles, legs, and scrotum, with shortness of breath, palpitation and mild precordial pain. He had lost five to ten pounds in weight during the past year. His mother died of tuberculosis; wife living and well; three sons and five daughters; one son has Hodgkin's disease. His occupation was that of elevator operator; his arthritis did not interfere with this work.

Physical examination on admission. While lying in bed there was no apparent dyspnea. The heart borders were apparently normal to percussion. There was a systolic murmur heard best at the apex in the fifth inter-space, which radiated slightly to the axilla; there was a metallic second sound at the base. Blood pressure 180/102. The abdomen was distended and slightly tender; fluid wave present. Mild edema of the legs. Clinical impression was hypertensive heart with decompensation and old hypertrophic arthritis of the hips. Patient got along well until February 26, when, while going to the bath room, he fell to the floor. He was carried to bed

and complained of severe pain over the precordium and difficulty in getting his breath. He did not obtain relief from amyl nitrate, nitroglycerin or morphine sulphate. The pulse was 96 and was weak and thready. Respirations were rapid. The heart tones were inaudible. He died in 55 minutes. He was unconscious and had Cheyne-Stokes respirations five minutes before death.

During the stay in hospital the temperature varied from 98° to 100.5°. The Wassermann was negative. A blood count showed the hemoglobin to be 75 per cent, erythrocytes 4,000,000, and leukocytes 7,600. The sedimentation time was 53 minutes. One sample of urine was negative. The stools were negative on three occasions for occult blood. P. S. P. total was 35 per cent at the end of two hours. An electrocardiogram on the day of death showed upright P waves throughout. There was no abnormality in the conduction time. There was a left ventricular preponderance. The T waves were upright in I and II and isoelectric in III.

X-ray examination on February 12 showed a negative stomach and duodenum. There was no appreciable change in the arthritis since the last examination. On February 18, barium enema showed a negative colon except for spasticity throughout, especially in the transverse and descending portions. On February 22, a single

plate of the chest showed marked infiltration throughout both lungs with associated fibrosis and calcification due to old tuberculosis. Recent involvement was not ruled out. The upper mediastinal shadow was apparently due to a substernal thyroid. The heart equaled 50 per cent of the chest width. There was marked elevation of the left diaphragm.

Post-mortem report. A thin layer of subcutaneous fat. One thousand cc. of slightly cloudy strawcolored fluid in the peritoneal cavity. The intestines are studded with small opaque elevated masses one to seven mm. in diameter. Similar nodules over all the parietal peritoneum. (Microscopic diagnosis, miliary tuberculosis.) The right lobe of the liver is adherent anteriorly and laterally by fibrous adhesions; small tubercles over the peritoneal surfaces of the liver. Old adhesions at the left apex. The right pleural cavity is completely obliterated by old adhesions. Embolism of the left pulmonary artery. The heart weighs 315 grams; fairly marked coronary sclerosis. Old bilateral pulmonary tuberculosis, partially healed. Tuberculosis of the bronchial lymph nodes. The spleen weighs 170 grams; no tuberculosis found. The kidneys show finely granular surfaces. The prostate is not enlarged. No ulcers in the intestinal tract. Advanced atherosclerosis of the aorta. The source of the embolus is not found. Examination of the veins of the lower extremities was not permitted.

Diagnosis. 1. Chronic pulmonary tuberculosis with tuberculous peritonitis (the hips are not examined but these may have been tuberculous). 2. Pulmonary embolism.

Note. The source of the pulmonary embolism was probably thrombosis in a vein of one of the legs. This was the immediate cause of death. Clinically a primary hypertension was present but the post mortem findings indicate that this was not responsible for the clinical symptoms. The tuberculosis of the lungs and peritoneum accounts for all of the clinical symptoms present. Autopsy—31—300.

A white male infant was born February 19, 1931, 1:25 A. M. Mother 24 years of age, para 1, gravida 2. Last menstrual date May 10, 1930; expected date of confinement February 19, 1931. Careful prenatal care was given. There were no complications at any time during the pregnancy. Presentation was O. L. A. Duration of labor 13 hours 45 minutes; no interference. The condition of the baby at birth was excellent.

On February 20 at 6 A. M. the infant began to bleed from the mouth and rectum; passed a large amount of fresh blood; he became cyanotic, restless, and weak; the hemorrhage from the bowel continued. Coagulin (2 cc.) was given; 10 cc. of whole blood was given intramuscularly. Death occurred 11:45 A. M. February 20. There were no hemorrhages in the skin. Bleeding and clotting times were not taken.

Post-mortem report. A large amount of blood is found in the intestinal tract. All the organs are very pale. Three small ulcers are found in the first part of the duodenum, the largest measuring 1x1.5 cm. No other abnormalities are found.

Diagnosis. Duodenal ulcer of the newborn (melena neonatorum).

Comment. Melena neonatorum was formerly classified as a hemorrhagic disease. It was pointed out by Helmholtz some years ago that all of these cases are really ulcer of the duodenum. There are no subcutaneous hemorrhages, as in true purpura. The only

bleeding from the mucuous membrane is that which occurs from the ulcer.

Autopsy—31—291.

The case is that of a man 47 years old, admitted to hospital February 10, 1931. In 1886, when he was two years old, he sustained an injury to the distal end of the right fibula and tibia and developed a draining sinus. Pieces of bone came out from time to time. There was intermittent drainage for the next 20 years. In 1906 the sinus ceased to drain and gave no more trouble until 1918 when he developed a severe case of influenza. Following the attack of influenza he noticed redness and swelling of the left hip. This was lanced by a physician who obtained a great deal of pus and inserted a drain. There had been intermittent drainage from the hip since that time. In 1930, another sinus appeared on the inner side of the left thigh and had drained intermann and Kahn were negative. Stools were negative. Patient was given transfusion on February 3 and February 4 with slight improvement. About this time, the liver dullness became increased.

February 11 the abdomen was opened. The liver was found enlarged three times and there was a large loculated abscess in the left lobe. This was drained. A large amount of foul smelling pus was obtained. This showed streptococci and colon bacilli. Following the operation, the abdomen was softer and the patient was slightly improved but was still toxic.

In view of the above finding, further inquiry was made as to possible abdominal distress, with particular reference to an attack of appendicitis which the patient might have had during the past several months. The mother then stated that the baby had had an attack of vomiting and apparent abdominal cramps one night in the early part of December 1930 but was apparently recovered from it by morning and nothing was thought of the incident. A similar attack occurred at the time the little one had influenza early in January.

February 20 a fluctuating mass was noted in the right lower quadrant. This was drained. A large amount of foul smelling pus was obtained. The temperature was less elevated and the patient took nourishment well and appeared generally improved but was still quite toxic. She was listless and her condition was not satisfactory. Temperature septic. Drainage of the right lower quadrant was done again on March 4. No improvement and she gradually succumbed to the infection and toxemia, death occurring March 12, 1931.

Post-mortem report. Body somewhat emaciated; no edema, cyanosis, or jaundice. Open surgical wound in the epigastrium. Generalized peritonitis. The appendix is retrocecal; the terminal portion is occupied by an abscess about 3 cm. in diameter; extensive suppuration around the appendix behind the cecum. Thrombosis of the mesenteric, splenic, and hepatic veins and inferior vena cava. The liver weighs 650 grams; it is filled with numerous irregular abscesses. Cloudy swelling of the kidneys. Acute pericarditis.

Diagnosis. Suppurative appendicitis followed by thrombosis of the veins and abscess of the liver.

Comment. This is a frequent result of suppurative appendicitis. The infection spreads through the branches of the portal vein and reaches the liver. There were no findings upon which to base a diagnosis of appendicitis prior to the formation of the abscesses in the liver. Appendicitis is the commonest cause of abscess of the liver.

Autopsy—31—328.

The case is that of a white man, 73 years of age, admitted to hospital August 18, 1930, the first time. In February 1930 he began to cough and raise some white sputum. Also had some difficulty in swallowing solid foods at this time. The food seemed to stick in his throat at the level of the larynx; he had to hawk to get the food up. He had lost 20 lbs. in weight since the onset of the illness. In May he complained of pain in the inferior angle of his jaw on the left side. He was given a radium treatment at this time after which he could swallow better and resumed his work. During June his chief trouble was severe occipital and parietal headache. In July the difficulty in swallowing recurred. He could hardly swallow any solid food.

On admission, August 18, 1930, he was emaciated and complained of severe headaches and pain in the neck. Examination of the mouth showed a red, irregular, nonulcerating mass, arising from the posterior and lateral pharyngeal wall. The tumor was very hard and was painful on pressure. The submaxillary lymph nodes on the right side were enlarged. The lungs were negative; heart tones distant. Blood pressure 184/84. Biopsy was taken from the lesion in the throat.

Urine negative. Hemoglobin 90 per cent; white blood cells 10,250; 75 per cent polymorphonuclears, 25 per cent lymphocytes. Blood urea nitrogen 30.8 mg. X-ray showed no tumor metastases. The aorta showed extensive dilation of the senile ectasia type. Roentgen examination of the esophagus was difficult because of regurgitation of barium into the larynx and trachea. Radium seeds were inserted into the tumor. Following the radium treatment the patient was able to swallow again and felt better except for weakness and loss of weight. He was discharged on August 26.

On October 26 he returned to the hospital, complaining of difficulty in swallowing, choking, and coughing. He became progressively weaker. Symptoms persisted; he complained of headache, pain in the neck, difficulty in swallowing, and weakness.

On February 21, 1931 he developed a low grade fever, became drowsy and cyanotic. Death February 25.

Post-mortem report. Marked emaciation; decubital ulcer over the sacrum; terminal bronchopneumonia. Massive tumor infiltrating the oral and laryngopharynx. Microscopic examination at biopsy and at post-mortem showed a rapidly growing squamous cell carcinoma. There was extensive atherosclerosis of the aorta with fusiform dilation throughout the thoracic portion. This is a high degree of ectasia, not a true aneurism. Metastases in the cervical lymph nodes. Multiple diverticula of the sigmoid and descending colon. Moderate hypertrophy of the middle lobe of the prostate.

Diagnosis. Squamous cell carcinoma of the pharynx.

Comment. This is the typical course of carcinoma of the pharynx. The outstanding difficulties are dyspnea and loss of weight. Death is commonly due to bronchopneumonia, oftentimes as a result of aspiration of material into the lungs.

Autopsy—31—579.

The case is that of a white woman, 50 years of age; had 8 or 9 children; some chronic arthritis in hands, feet, and knees. Present illness began about 4 weeks ago with chilliness, fever, and general malaise. Attack considered *la grippe* at first. Two days later temperature had remained 102° to 103° and examination showed

beginning pneumonia of left upper lobe. Signs of early consolidation more marked in back at edge of left scapula. Sputum contained short chain diplococci; no capsules. White blood cells 17,000. Within a few days, signs of pneumonia (dullness, crackles, and breath sound increase) spread from upper part of upper lobe but did not extend to complete extent of lobe. On the 8th or 9th day the temperature began to drop and reached normal but was followed by a chill which then recurred almost daily with temperature 103° to 105°. White blood cells 15,000. There had been a systolic murmur at the apex throughout the illness. During febrile periods this murmur was very much more pronounced, probably due to heart rate. No evidence of emboli. Very little cough at any time after subsidence of initial febrile stage. Chest signs cleared up with exception of an area below the left clavicle, extending out and down into the axilla. Dullness not marked but definite; breath sounds and voice sounds increased. A few crackling rales heard over this area always. No decrease in sounds or size of area in past 2½ weeks. White blood counts 13,000 and 15,000 on two days.

Patient entered hospital March 26 for x-ray study and further investigation. Blood culture taken March 26 remained negative. X-ray indicated unresolved pneumonia. High polymorphonuclear count on all examinations. Urine concentrated; trace of albumin; a few hyaline and granular casts; no blood or pus.

Chest tap March 29 showed no adhesions; a few drops of normal chest fluid obtained; needle not entered into lung.

Patient continued to have daily chills with temperature reaching 103° to 105°; no other changes. March 31 she had a reaction (not a true chill) during which she lost consciousness for about 15 minutes, followed by temperature of 104°. About an hour later a similar attack, though more severe, was followed by hours of unconsciousness. After this a great many petechiae were noticed over chest and upper arms; a few on abdomen and legs; these had appeared after the morning examination at 10 A. M.; possibly a few were present earlier but not noticed. During the night the heart muscle weakened and patient was unconscious from 10 P. M., growing weaker during the night. Death April 1, 5:10 A. M.

Clinical diagnoses: unresolved bronchopneumonia; acute endocarditis (?) with bacteriemia.

Post-mortem report. Slight edema of the ankles; many small petechial hemorrhages in the skin of the anterior chest and neck; no ascites. Each pleural cavity contains about 150 cc. of cloudy fluid; serofibrinous exudate over the entire left lung. The heart weighs 335 grams; large soft vegetation on the mitral valve; other valves normal. Pneumonia of the left upper lobe, apparently unresolved. The spleen weighs 710 grams; several large infarcts. Cloudy swelling of the liver. Multiple infarcts of the kidneys.

Diagnosis. Unresolved pneumonia with subacute bacterial endocarditis.

Comment. The pneumonia probably preceded the endocarditis but after the pneumonia cleared up to a considerable extent the clinical picture was almost entirely that of subacute bacterial endocarditis. The single soft vegetation supports the view that the pneumonia was primary to the endocarditis.

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North Dakota State Medical Association

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The Hennepin County Medical Society

North Dakota State Health Officers Association

Great Northern Railway Surgeon's Association

The Minnesota Academy of Medicine

The Soo Railway Surgical Association

The Sioux Valley Medical Association

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THE VALUE OF FOREIGN TRAVEL

Since the days of Marco Polo, the value of travel as an educator has been definitely recognized. It gives to one a certain useful contact with life and work obtainable by no other method. In the field of medicine its value is particularly apparent for here, more than in any other pursuit, changes come quickly and must be duly recognized if the physician is to be competent in his work. These changes in the art of healing are sometimes well emphasized in the periodical literature of the day, but only too frequently their true worth cannot be determined until one comes face to face with the clinical work in the case.

Those who have traveled, well realize the importance of social contacts. The acquaintances made and the friendships developed form no small part of the traveler's acquisitions, for so frequently they carry with them experiences not easily forgotten and things most pleasantly remembered. To have gained the acquaintance, preferably the friendship of good men in search of common objectives and with whom life's notes may be compared, is indeed a worth while experience. To physicians in particular it lends to a better understanding of their many and varied problems.

A rich heritage of medical history and an environment so conducive to a wealth of clinical material makes Europe indeed a happy hunting ground for the progressive doctor. To one interested in medical history there is much for thoughtful pondering. Many of the old hospitals where the past masters worked are still in operation. Museums containing their diagnostic equipment and pathological contributions are filled with fascinating collections. To any physician visiting London or Edinburgh, a trip through the Royal

College of Surgeons' museum, in either of these places must not be missed. Here he finds one of the largest and rarest collections of pathological specimens in the world and a wealth of antiques and medical instruments used in the early practice of medicine.

The value of medical clinics is of course self-evident. Given in any country, their worth is dependent upon the wealth of clinical material and the greatness of the teacher. The European medical clinics as compared to our own, show on the whole, no great amount of difference. Why should they? The diseases, in general, are much the same throughout the world. The methods of diagnosis in medicine are practically the same and treatment does not vary nearly as much as we would suspect. The difference however that does exist, in all these respects, is what adds to the interest of foreign methods. It is the hope that the knowledge of that difference may prove extremely valuable to us, that lures us on to foreign shores.

As a rule, the European countries have a rich variety of clinical material. The denseness of the population makes for a better concentration of clinical cases and so a single hospital may show a large number of unusual types or kinds of disease. Their teachers are well trained, thorough, and particularly learned in the fundamental medical sciences such as anatomy, physiology, and pathology. As clinicians, however, they do not excel our own teachers and in the specialized fields, especially in the British Isles, they are apparently not as advanced as we are. Nevertheless, the foreign traveler gains a great deal of knowledge from their interesting clinics and finds many things worth taking back with him.

Perhaps the greatest value that comes from a brief but intensive medical tour in Europe is the opportunity to measure foreign medicine with that of your own country and to help one to recognize more fully his own personal abilities and limitations. There is a certain disillusionment and enlightenment that comes from travel that is most refreshing. It is one thing to read about,

hear about, imagine and form certain mental pictures of a given situation, but quite another matter to see the thing as it really is. There is a popular belief, particularly among the laity, concerning the superiority of European medicine over that of our own. To the doctor who visits Europe, I believe this delusion is quickly dispelled. He becomes deeply impressed with the realization that if he were seriously ill, he would prefer to take his chances with the American doctor, the American nurse, and the American hospital than with the same European accommodations.

The opportunity, therefore, which foreign travel affords, of quietly measuring our strength with that of other people is indeed a valuable experience. It is a friendly and fruitful maneuver resulting in an exchange of ideas which proves beneficial to both sides.

A. S. A.

BOOTLEG SURGEONS

Graduates of Medical Schools are licensed to practice surgery without any clinical experience in many states. In some states an internship in an approved hospital is required before licensure. That a special post graduate course leading to a degree in surgery should be required before entering the practice of surgery, has been advocated by many men. The following editorial by Dr. Thurston Scott Welton, reprinted from the American Journal of Surgery, brings before us some of the dangers resulting from the unscrupulous practice of surgery.

"A new breed of 'cutter' has sprung up in various parts of the country. They are discovered in the poorer sections of densely populated communities. They are graduates of medical schools. They are licensed to practice medicine and surgery by the state in which they reside.

These vermin are without a semblance of surgical training. Many of them cannot boast of a six months' internship in a fourth rate hospital. Often they graduated from medical school within the past five years. They possess real insight into the psychology of human beings, have a thick crust, both mentally and spiritually, never did have a conscience, but their bump of business acumen is developed to the nth degree.

They open an office and personally call upon the general practitioners in their vicinity. They talk business from the start. The bootleg surgeon promises to use the practitioner when he can, for which he will be paid, and in return the general practitioner is to refer all his surgery to the 'cutter' who will remit from 50 to 75 per cent of the fees charged. An equitable arrangement for

all parties. In no time the 'carver' is doing a great volume of work. Needless to say all kinds of unnecessary surgery is done. The mortality is frightful. The morbidity never will be computed. But the patient always pays and pays. One of their favorite tricks is to give a hopeless prognosis. Should death follow, their alibi is airtight. If the patient lives to leave the hospital or sanitarium the surgeon is a miracle worker.

Personally, we know several of this type. One of them, not five years in practice, already is independently rich. These surgical outcasts may be criticized, but nothing can be done about it—not at the present, at least—except giving vent to indignation, as we are doing, for example.

The fault lies with our laws. One passes a state board examination and is launched forth to do surgery or medicine in any or all its branches. No previous experience is necessary.

It is hurting the medical profession. It is unfair to the public. It is unfair to the young man who spends from two to five years as an interne or hospital resident to prepare himself for his calling.

Talk will get us nowhere. The laws need changing. Some of our medical practice acts need revising and long, sharp teeth added and then used."

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. O. N. Nelson, Battle Lake, Minn., has moved to Minneapolis, and is now associated with Drs. Ericson & Ericson.

Dr. P. T. McCarthy, Missoula, Mont., has been spending several weeks in Chicago, studying at the leading clinics of that city.

Dr. J. L. Erickson, formerly located at Hendricks, has moved to Canby, Minn., and opened offices for general practice.

Dr. Arnold Schwyzer, St. Paul, with his family have recently returned from a six months' trip in Europe.

Dr. T. L. Hawkins, Helena, Mont., has been granted three licenses by the U. S. Airplane Department. One as a pilot, one as a mechanic and one as a pilot for flying.

St. Louis County, Minn., have purchased the Shaw Hospital at Buhl, and have already taken possession of the property. Very few changes will be made in the present staff.

Dr. S. G. Larrabee, for many years connected with the Minnesota State Medical Department at St. Paul, has moved to New Ulm, Minn., where he has opened offices.

Because of an error in a bill passed by the 1931 Minnesota legislature the state board of health will be advanced \$21,000 to carry the division to the end of this year.

Drs. Sverre and Hans Oftedal, of California, are spending a few weeks in visiting their brothers at Fargo. The Oftedal family are well represented in the medical profession.

Dr. Lee T. Rector who has been in active practice at Montrose, S. D., for the past few years, has sold his practice and will locate in some southern city in the Veterans' Bureau Service.

Dr. C. Oliver Heimdal, who has recently completed his Fellowship in Surgery at the Mayo Clinic, has opened office at Aurora, Ill., for general practice.

Dr. Ira M. Roadman, who has been in the U. S. service at Ponsford, Minn., for the past 12 years, has moved to Minneapolis, where he will continue in general practice.

Dr. F. W. Rankin, Rochester, Minn., was on the program as one of the leading speakers at the annual meeting of the Kentucky State Medical Society last month.

Dr. J. V. Jamieson, DeSmet, S. D., who has been in active practice in that city during the past 12 years, will move to Ft. Harrison, Montana, to take charge of the hospital service of the fort.

Dr. A. O. Fonkalsrud, who has been Superintendent of the Sioux Valley Hospital at Sioux Falls, for the past eight years, has resigned and the Rev. C. M. Austin has been named as his successor.

Dr. F. E. Harrington, health commissioner of Minneapolis, was elected secretary and treasurer of the International Society of Medical Health officers, at the annual meeting in Montreal, last month.

Alfred G. Stasel, manager of the Nicollet Clinic, Minneapolis, attended the annual meeting of clinic managers held at Toronto last month. Minnesota was represented by about fifty members, the largest number from any of the states.

Dr. Chas. McLachlan, superintendent of the San Haven, N. D., State Tuberculosis Sanatorium, reports 213 patients, ranging from children to aged folks, are now seeking health at this sanatorium.

Dr. Horace Newhart, Minneapolis, was at French Lick Springs, where he attended the annual meeting of the Academy of Ophthalmology and Oto-laryngology of which he is one of the past presidents.

Dr. B. T. Bottolfson, Moorhead, Minn., has been notified of his award of a fellowship in the American College of Surgeons. He will officially receive the honor when he attends the convocation on October 16th at the Waldorf Astoria hotel, New York city.

The Minnesota State Board of Examiners of Nurses will hold examinations on Thursday and Friday, October 22 and 23, at Crookston at the St. Vincent hospital, St. Paul, State Capitol, Duluth, St. Mary's Hospital, and Rochester at St. Mary's Hospital.

Dr. and Mrs. B. A. Dyar, De Smet, S. D., were hosts to the members of the Kingsbury County Medical Society last month. It was a farewell dinner to Dr. and Mrs. G. V. Jamieson, who have recently moved to Montana, to make their future home.

Preparations are now under way to ask Minneapolis to set a new standard of giving in behalf of the greatest need in the history of the Community Fund for 1932. Over 7,500 solicitors are already lined up for the campaign and they have selected this slogan, "They Need You Now."

Dr. Fred J. Pratt, Minneapolis, attended the meeting of the American Academy of Ophthalmology and Oto-Laryngology, held at French Lick Springs, where he taught at the Section of Instruction, which was held in conjunction with the meeting.

One of our physicians makes this good suggestion: "It seems to be a universal practice in hospitals to remove vases of flowers from a sick room for the night. Plants liberate oxygen as we all know when growing in soil." Why should flowers in a vase be removed?

Dr. W. H. Saxton, Huron, S. D., has been accepted for a fellowship in the American College of Surgeons, under the classification of Obstetrical specialist. Three other Huron physicians are members of College. Drs. L. N. Grosvenor, J. C. Shirley and B. H. Sprague.

Members of the Grand Forks District Medical Society held their first fall meeting last month at Grafton, with a large attendance and a fine program, with the principal speaker being Dr. Alex Gibson, Winnipeg, who presented a splendid address on "Fractures."

The Sioux Falls District Medical Society held their monthly meeting at Sioux Falls, on the evening of September 15th, with Dr. Stanley R. Maxeiner, Minneapolis, being the principal speaker on "Local Anesthesia." A fine dinner was served.

Dr. A. J. Braden, Duluth, one of the leading surgeons of the Northwest died at St. Mary's Hospital last month. Dr. Braden was a graduate of the University of Michigan in 1888 and located at Duluth in 1893. He was very active in all civic, fraternal and medical organizations.

St. Joseph's Hospital, Brainerd, Minn., was recently inspected by Dr. C. W. Moots, Chicago, field inspector of the American College of Surgeons, and pronounced it one of the most modern, well-equipped and thoroughly efficient hospitals in the Northwest.

Dr. G. S. Wattam, Warren, was elected president of the Northern Minnesota Medical society at the annual meeting held at Hibbing, Minn., last month. Dr. Cyril M. Smith, Duluth, vice president, and Dr. O. O. Larson, Detroit Lakes, secretary-treasurer. Crookston was chosen as the 1933 meeting place.

Dr. Wilson Lancaster and Dr. George C. Jacobs, Wahpeton, N. D., well known surgeons have sold their separate practices to Dr. Andrew Thompson, formerly of Abercrombie, N. D., and Dr. C. V. Bateman, of Mountain Lake, Minn. Drs. Bateman and Thompson have formed a partnership and have purchased the building owned by Dr. Lancaster.

Dr. Henry J. O'Brien, well known physician and surgeon, died last month at his Lincoln avenue home in St. Paul. He had been seriously ill only a few days when he suffered a paralytic stroke. He was a member of the Miller hospital staff. Dr. O'Brien's lifelong concern for the care and welfare of the sick manifested itself in many ways of outstanding importance to the city.

Dr. Elis Berven, clinical director of Radiumhemmet, Stockholm, Sweden, one of the world's outstanding workers in cancer and radiation therapy and associate of Gosta Forssell, the well known radiologist who was president of the International Congress of Radiology in 1928 came to this country upon invitation of the American Roentgen Ray Society and gave a lecture at the

annual meeting held in Atlantic City recently. He favored Minnesota with a visit and gave a lecture at the University Hospital, Saturday, September 12th, dealing with the organization of Radiumhemmet and the results obtained from treatments there. A dinner was given in his honor that evening by Dr. and Mrs. K. W. Stenstrom, whose house guest he was during his stay in Minneapolis.

SOCIETIES

Minnesota Medical Alumni Association Program

The program of the Annual Scientific and Business Session of the Minnesota Medical Alumni Association to be held in the Eustis Amphitheatre in the University Hospital, October 30, 1931, will open at 9:00 o'clock with Dr. J. F. Corbett, Minneapolis, presiding.

The morning presentations will be:

"Oral Cholecystography," Dr. J. R. Aurelius, St. Paul.

Pediatric Clinic, Dr. Irvine McQuarrie, Head of Dept. of Pediatrics, Medical School, University of Minnesota.

Skin Lesions—Demonstration by lantern slides, Dr. John Butler, Minneapolis.

"The Present Status of Surgery of the Gall Bladder," Dr. E. Starr Judd, Rochester Minn., President, American Medical Assn.

Blood Pressure in Relation to Insurance Examinations, Dr. C. Naumann McCloud, St. Paul, Medical Director, Minnesota Mutual Life Ins. Co.

Practical Demonstration of Varicose Vein Injection, Dr. J. M. Hayes, Minneapolis.

Luncheon at 12:00 o'clock at which time Dr. Richard E. Scammon, Dean of Medical Sciences, University of Minnesota, will speak. The delegates will meet for the annual business meeting of the association at this time.

Dr. C. N. Hensel, St. Paul, will preside at the afternoon session which will convene promptly after lunch and the business meeting, with the following presentations:

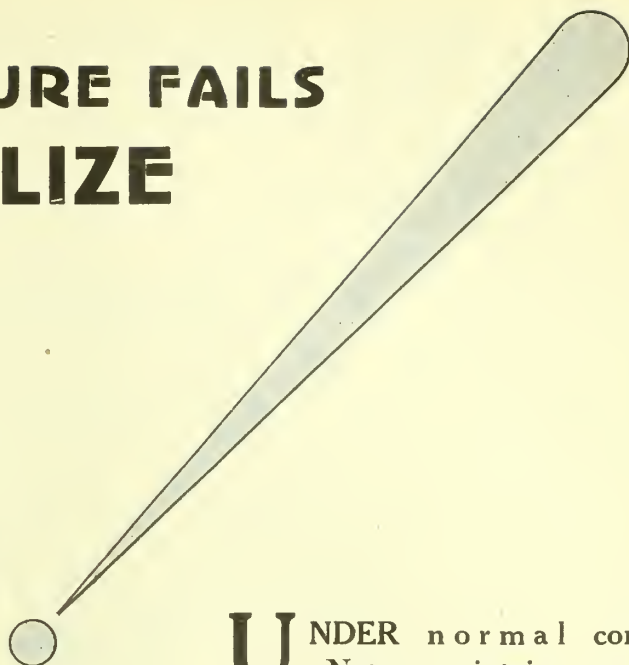
Orthopedic Clinic, Dr. Wallace H. Cole, St. Paul. "Pain in Gynecological Diagnosis," Dr. S. B. Solhaug, Minneapolis.

"The Unimportant Heart Murmur," Dr. S. Marx White, Minneapolis, President, American College of Physicians.

"Thoracic Surgery in the Treatment of Tuberculosis," Dr. T. J. Kinsella, Glen Lake Sanitarium.

Neurological Gaits and Other Conditions—Demonstration with moving pictures, Dr. J. C. McKinley, Division of Nervous and Mental Diseases, Medical School, University of Minnesota.

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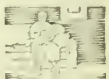


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BOOK NOTICE

MACLEOD, JOHN JAMES RICKARD, and others. *Physiology and biochemistry in Modern Medicine*. Sixth edition. St. Louis, C. V. Mosby Company, 1930. Price: \$11.00. Pp. 1106, with 295 illustrations.

DR. MACLEOD, who is now Regius Professor of Physiology in the University of Aberdeen, Scotland, has prepared the sixth edition of his text book of physiology and biochemistry in modern medicine. This standard text book was originally a guide to physiology in the bedside study of disease, but has been expanded to its present size so that it may also be used as a text of physiology. It retains, in the present edition, all the old advantages without too great increase in size. It remains a book for any physician to keep in his library, not to read as a whole, but for a most enlightening and practical source of information on the physiology of the every day case. There is much the clinician will pass over, for want of time, with a feeling that he will return at the first opportunity, but even a few minutes search for particular information will be amply rewarded.

H. B. SWEETSER, JR., M. D.

THE MEDICAL CLINICS OF NORTH AMERICA. Chicago number. Vol. 14, No. 5. March, 1931. Philadelphia, W. B. Saunders Co., 1931.

This volume contains 253 pages and 53 articles. The articles are short averaging 5 pages and cover a large range of medical interest. The clinicians present the case, show how the diagnosis is arrived at and gives

the treatment and the results. The articles are very instructive and interesting and really offers an easy method of postgraduate study.

A. N. BESSESEN, JR., M. D.

MISCELLANEOUS

PATHOLOGY OF SICKLE-CELL ANEMIA

WALLACE M. YATER and MARIO MOLLARI, Washington, D. C., (*Journal A. M. A.*), give the clinical history and post mortem observations in a case of sickle-cell anemia in which the patient died during an "abdominal crisis" apparently as the result of an arterial thrombosis of the liver. They state that the pathologic changes of sickle-cell anemia are distinctive, particularly as regards the spleen. The spleen becomes markedly atrophic, the pulp diminishes, the Malpighian bodies disappear and calcium and iron incrustations are prominent. The liver and kidneys contain iron incrustations, and the kidneys also have calcium deposits in their tubules. The bone marrow is hyperplastic. The spleen plays more than a minor role in the disease; more splenectomies should be performed as early as possible in an effort to produce at least a symptomatic cure.

INTERVERTEBRAL DISK

EMIL S. GEIST, Minneapolis (*Journal A. M. A.*), demonstrates in the light of Schmorl's work, the anatomy, physiology and pathology of the intervertebral disk and calls attention to clinical deductions drawn therefrom in the recent literature as well as from clinical

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experience. He believes that this is of importance to the orthopedic surgeon, the compensation adjuster and the roentgenologist. He discusses pathologic conditions of the disk itself, pathologic conditions of the spine in which the disk plays the preeminent part, and pathologic conditions of the spine in which the pathologic changes of the disk are of secondary nature.

DISCOVERY AND PREVENTION OF TUBERCULOSIS IN COMMUNITY; A PROGRESS REPORT ON "TEN YEAR PROGRAM" IN MASSACHUSETTS

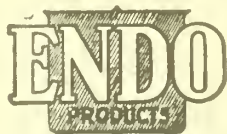
ALTON S. POPE, Boston (*Journal A. M. A.*, Sept. 19, 1931), reports that in Massachusetts it has been found practicable to examine school children for tuberculous infection on a state-wide basis by the general application of the Pirquet test and the roentgenogram as a further screen for the reactors. Although the Pirquet test is less sensitive than the intracutaneous test with two or more dilutions, its simplicity makes it much more acceptable when parental consents are required and so makes it possible to examine a larger proportion of the school population. Studies on some 4,000 children in Massachusetts schools indicate that over 90 per cent of the patients with tuberculous lesions demonstrable by roentgenography react to the Pirquet test. In certain Massachusetts cities studied, there appears to be a definite correlation between the tuberculosis death rate, the percentage of reactors in the public schools and the proportion of pulmonary tuberculosis found among school children. In a group of children followed from two to

six years, significantly more pulmonary tuberculosis has developed among those with the childhood type of the disease than in a "suspect" group. Exposure to open pulmonary tuberculosis in the household appears to be the most important single factor in the development of tuberculosis in children. Control methods should include the family as well as the infected individual, and the effectiveness of such methods depends directly on education of the public in the essentials of control and on the active cooperation of practicing physicians.

TREATMENT WITH MALARIA AND ACQUIRED ANAPHYLACTOID REACTION TO QUININE: SUCCESSFUL USE OF QUINIDINE

Benign tertian malaria in a patient with acquired anaphylactoid reaction to quinine was successfully treated by J. P. SANDERS, Caspiana, La. (*Journal A. M. A.*, Sept. 19, 1931), with quinidine, the dextrorotatory isomer of quinine, without discomfort to the patient. A positive skin test was obtained to quinine but not to its dextrorotatory isomer, quinidine. A son appeared to have inherited a form of quinine intolerance, as he suffered from urticaria on the one occasion when it was given, but he gave a negative skin test to quinine. The author states that quinidine sulphate, U. S. P., given in 10 grain (0.65 Gm.) doses once a day about two to four hours before the ordinary hour of the paroxysm has given prompt and good results in a small series of patients with malaria. The results strengthen the suggestion of Dawson and Garbade that quinidine may well be given a trial in the treatment of malaria in cases of quinine intolerance.

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Reference; W. A. Fansler, Hemorrhoidectomy
An Anatomical Method. Journal-Lancet, Sept. 1, 1931

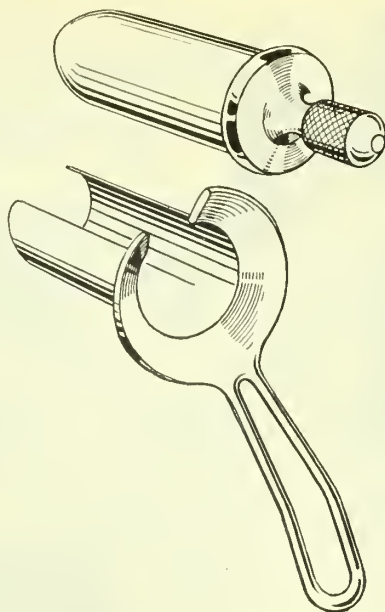
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ORGANIZED MEDICINE*

By E. STARR JUDD, M.D.

ROCHESTER, MINNESOTA

The organization of the practice of medicine has progressed very rapidly, due almost entirely to the work of the American Medical Association and its component societies. It is fitting that the activities of the medical profession should be organized, for it is only by such effort that we can hope to accomplish what we have set out to do, which is to bring the best possible medical service to American people.

The question often arises as to just how far this program should be carried. It would seem that it might be possible to organize to the extent that competition among practitioners would be entirely eliminated. This would not be for the best, for I think we all feel that active competition is necessary for satisfactory progress in any field. I mean competition in doing one's work well, and competition in attaining good results which follows work well done. With conscientious effort of this sort a large practice will almost surely develop for every good result and every well pleased patient means several more from that source.

If we continue our efforts to organize until we reach the point where it is unnecessary for the practitioner of medicine to keep up his reading of scientific journals because the work is cut and dried and new and better methods are not of interest, then we have most assuredly put a stop to progress.

If we organize our activities to the point that it becomes unnecessary to be attentive to the patient or interested in him as one who is sick, then I fail to see how we have helped to develop the profession which is supposed to be spending its life and best efforts in the care of those who are sick.

If organized medicine continues indefinitely to take over new responsibilities, it could lead but to superorganization where every medical man becomes a servant of the organization and real liberty is lost. Victory over our difficulties will be won by the resolution of our members to fight their own battles in their own communities, by stimulating their ingenuity to solve their own problems, by taking new courage to be masters of their own destiny. This is not the easy way, but it is the American way.

The art of the practice of medicine as carried out by the clinician or by the surgeon cannot be learned quickly, and a vast experience is the best teacher and produces the most satisfactory results. Not all members of the profession concur in this. I refer particularly to some of the younger practitioners, who think that after they have cared for one or two patients with typhoid or scarlet fever, for example, that they have had sufficient clinical experience with these conditions and that the treatment of similar cases in the future will require just the routine following of the plan laid down. But no amount of experience is too great, for unfortunately no two cases are identical.

*Read before the Jubilee Session of the North and South Dakota State Medical Associations, Aberdeen, South Dakota, June 2, 3, and 4, 1931.

Artistry and craftsmanship in the performance of surgical operations has saved many lives. Perfection in carrying out the technic of the procedure must be gained by long and careful training. Each operation must be performed many times before it can be undertaken with confidence and carried out without loss of time and without unnecessary trauma to the tissues. Furthermore, each operative field must have been encountered many times before the operator can be confident that he knows the structures that he sees and feels so that he may proceed promptly with the operation that is suitable in that particular case. Even though we cannot hope to reach the point of perfection in the practice of the art of medicine and surgery, we can at least be careful in the further development of plans for the organization of such practice, in order not to do a great injustice to the science.

Both organization and administration in the field of medicine are being carried forward rapidly and many are entering enthusiastically into activities of this nature. It can readily be seen that with further development, more complete organization, and better administration, our work may be much more easily performed, but is it not possible that the results obtained may be less satisfactory from the patient's standpoint? We might even reach a state at which a surgeon would be assigned to perform an operation because it was in the plan of organization that he was the next one assigned to do this particular thing, and not because he had any special qualifications for the work he was setting out to do.

So much for the criticism of what might come from organization of the practice of medicine, and now I should like to call attention to some of the benefits and to the advances that have been made through organization.

It is most interesting to look back into the early history of the American Medical Association, and to see and to try to realize the difficulties of men in the medical profession in that day.

The great cry in the early day was higher standards of preliminary education and of medical education as well. Those who controlled the medical schools, which naturally were very inadequate and poorly equipped, wished to have all the students they could get. Therefore, they kept the requirements for admission down so that any one who had a desire to enter the school was most acceptable. On the other hand, the practitioners of medicine who were not connected with any school, wanted as few practicing physicians as possible, so they strove for higher requirements and more extensive training.

It required a considerable amount of work and grief on the part of the Council on Medical Education and Hospitals finally to get the requirements for medical education regulated, to dispose of many inferior medical schools, and to classify the others. I believe the work of this Council on Medical Education and Hospitals has accomplished more for organized medicine than has any other committee or association. It would have been impossible to have attained any semblance of an organization without the accomplishments of this council.

Most of our medical societies are organized on a truly democratic basis and each one of them has some form of legislative body, or committee, or group of delegates, so that the control of organized medicine is in the hands of these groups that are elected by members of the society. This results in the policies and activities of the societies being in the hands of the members themselves.

I cannot conceive of a more satisfactorily organized group than are the medical men of this country through the American Medical Association, with its board of trustees, its several councils to attend to special affairs, the house of delegates composed of representatives from each state society, which are in turn elected by delegates sent from each county society.

The scientific activities are equally well in hand through the Council on Scientific Assembly, and, in the state and county societies, through either a special committee or a much overworked secretary. I have the greatest admiration for a man who is willing to accept the position of secretary in his county society. In the smaller counties he has great difficulty in getting the members assembled for a meeting, he hears all sides of the stories of the different members, and sees from all sides the petty jealousies that we have been accused of having, and which I am afraid still exist, although not to anywhere near their former extent. Nothing helps this situation more than to get all the members of a society together at a meeting. I believe this is realized more than ever, and as a result county society meetings are attended better than they were formerly.

I am anxious to call attention to a plan that is not new and probably is familiar to many of you, and that is, the employment of a layman as a business secretary or executive for the county society or state medical association. I know this is being tried in several places, and inquiries would seem to indicate that it promises to be successful. I am not in favor of employing laymen to operate any of our professional organizations as a rule, but I do believe that a business man,

trained and experienced in organizing and as an executive could run some of our county and state societies, and take that grief from some good medical man who should be spending more time with his patients and less in trying to settle some of these minor technical difficulties. This paid lay secretary would devote all of this time to this work. He would act as a business manager and have nothing to say about the policies of the society but merely see that they were carried out. He might be made an ex-officio member of the executive committee. There is no question but that many medical societies would profit by a more businesslike manner of operation. Most of us must admit that we cannot practice both medicine and business. The amount of help that a business man can be in any professional organization is not appreciated by those who have not had experience with it.

One of the greatest problems confronting organized medicine at the present time is that of obtaining a closer relationship between the medical profession and the people. The by-laws of the Minnesota State Medical Association have provided for a Committee on Public Health and Education, some of the functions of which are to develop an intelligent public viewpoint toward the medical profession and to coöperate with various agencies throughout the state the purpose of which is the promotion of public health and the governing bodies of which are, in whole or in part, laymen. This committee has been in existence five years, and through the able efforts of its members

it has accomplished a great deal. It has done much toward producing a united medical profession in the state. As a result, the Minnesota State Medical Association, the public health organizations, and any other bodies that deal with medical matters are fused into one large group which is under the supervision of a single secretary. Dr. E. H. Meyerding deserves much credit for bringing this about. A report of the organization of these groups, which was accomplished largely through his efforts, appears in a late *Bulletin of the American Medical Association*.

The most important point in our Minnesota plan of organization is that every medical activity in the state is under the direct leadership of our executive secretary, who in turn is advised by the Committee on Public Health Education or by the counselors of the State Medical Association.

That many of the state societies are making diligent efforts to secure better public relations is evidenced by the extensive discussion by the secretaries following the papers by Dr. Meyerding and Dr. Ross at a recent secretaries' meeting.

It seems to me that, regardless of what is being published from outside sources, the medical profession occupies a most important place in our social structure, and that through its plan of organization it is keeping pace with the times. While the "unsolved questions which confront the medical profession were never so varied, so vital, so profound as they are today," nevertheless we shall be able to meet these problems and solve them to the best interests of society.

LEUCORRHEA*

By R. T. LA VAKE, M.D., F.A.C.S.

Assistant Professor of Obstetrics and Gynecology, University of Minnesota

MINNEAPOLIS, MINNESOTA

This subject has been chosen because it is one of the most common gynecological disorders that direct a woman to her physician, and a disorder that is often the most recalcitrant to causal and successful diagnosis and treatment. The term leucorrhea has been used because from our notes "leucorrhea or whites" are the terms most used by women who have a genital discharge not tinged with blood.

There are six fundamental causes of all gynecological conditions: pregnancy, injury, infection, tumor, congenital and acquired deformities, and

constitutional and functional disturbances. Whenever a woman presents for a gynecological examination, we should by history, and physical and laboratory examinations, determine under which of these divisions the disturbance lies. It may lie under one or more. In this manner the diagnosis is made by exclusion, which precludes the errors of a snap diagnosis. Snap diagnoses account for a large share of the mistakes that we see made.

In this discussion let us begin with infection, because from a practical standpoint it is a cause that must in every instance be eliminated before going further. Under good lighting and direct vision smears should be taken from the urethra

*Read before the Jubilee session of the North Dakota and South Dakota State Medical Associations, Aberdeen, South Dakota, June 2, 3, and 4, 1931.

and cervix. In taking smears from the urethra care should be given to massaging out Skene's ducts. If the case looks positive on inspection, the smears, if given to a technician, should be definitely marked "suspicious" so that special care will be exercised in examination. If the disease is acute, rest in bed with forced fluids and warm, bland, soothing vaginal douches every four hours is the most efficacious treatment. As soon as the acute process subsides, douches should be discontinued, the urethra treated daily with a five per cent aqueous solution of mercurochrome, and the cervix treated daily with a twenty to twenty-five per cent aqueous solution of mercurochrome. Of all medicaments, it has been my experience that mercurochrome is apparently the most efficient in female gonorrhea. One must here emphasize the word "apparently." We have given long trials to argyrol, protargol, silver nitrate, mercurochrome, hexylresorcinol, metaphen, and methiodate. As no two cases can be deemed alike in points of virulence of the infecting organisms, resistance of the patient, and anatomic drainage, comparative results must be guardedly attributed to the types of antiseptics used. A large factor in successful treatment is the thorough cleansing of the cervix before treatment. Caroid powder on an applicator will clean the cervical canal most successfully. If the cervix is not well cleaned the medication does not get a chance to do its work. Do not consider the condition cured until the case is clinically free from all signs of inflammation and five negative smears are obtained, the last two following menstrual periods. Skene's ducts may have to be destroyed by cautery before a cure is effected, and Bartholin glands may have to be excised.

Gonorrhea in the child is best treated by the mother. Give her two blunt nosed medicine droppers and have her instil a few drop of twenty-five per cent argyrol in the urethra and a medicine dropperful into the vagina every four hours, and keep the child quiet for twenty minutes during the treatment. Take smears every month after all signs of irritation have subsided.

Lues should always be considered in the presence of any abrasion or ulceration in the internal genitals or cervix. The dark field examination should be made for spirochetes. All positive gonorrhea cases should be carefully checked with the Wassermann examination twice, when first diagnosed, and six weeks later.

The most common infection apart from gonorrhea is the trichomonas vaginalis. This infection gives a vaginitis with punctuate red spots on the cervix and vagina and a frothy green vaginal

discharge. A drop of normal saline on a warm slide and a drop of discharge will reveal the organisms darting here and there in the microscope field. The best treatment that I have found for this disorder is to scrub the vagina thoroughly with tincture of green soap, then dry thoroughly, paint the vagina and cervix with liquor hexylresorcinolis, 1-1000, and allow to dry. Then rub into the parts a salve consisting of two per cent ammoniated mercury and ten per cent sodium bicarbonate in vaseline. This is done twice a week, and every other night the patient inserts a cocoa butter vaginal suppository containing two per cent ammoniated mercury and ten per cent sodium bicarbonate. Sometimes one or two such treatments bring the condition to a close.

If small white patches occur in the vagina and cervix, examine the slide for *oidium albicans*, or thrush. The network of threads is easily recognized under the microscope. These patches are best removed by a half and half solution of peroxide of hydrogen and sodium carbonate, the part dried, and ten per cent silver nitrate applied directly to the patch. Several of these treatments applied every other day will generally suffice to cure the disease. Examine the urine carefully for sugar.

An infection not infrequent according to our examinations is that of *bacillus coli*. Thorough cleansing and painting with twenty per cent mercurochrome will clear this up. We find the cervix and vagina subject to every type of infection that can be introduced by fingers, douch nozzles, and the male organ. The treatment of all types fundamentally consists of general supportive care, thorough cleanliness, and the topical application of antiseptics.

In relation to infection, the two most common errors that we witness are failure to examine for trichomonas and failure to express Skene's ducts thoroughly before taking smears. Always use Gram's stain when searching for the gonococcus.

Having eliminated infection as a cause, injury as a causal factor should be considered. The two most common forms of mechanical injury causing leucorrhea are childbirth and the use of pessaries. Removal of the latter brings about subsidence. Childbirth injuries of the cervix vary from a simple stretching of the external os with failure to resume its previous contour, to various degrees of laceration and ectropion. A great many of these cases respond to linear cauterization. Make these linear cauterizations in the anterior and posterior lips parallel to the canal. Repeat at monthly intervals. When healed these linear cauterizations tend to cure the ectropion.

A word about the type of cautery used. To my mind the loop cautery is to be preferred because only the loop is hot and the rest is wound with silk and does not heat the vagina. This cauterization can be done in the office. Pain is practically rendered nil by placing a pledget of cotton containing twenty per cent cocain against the surface to be cauterized and allowing it to remain for twenty minutes before cauterization.

Some of these tears are deep and not amenable to the cautery method. When possible these should be repaired by a trachelorrhaphy. Trachelorrhaphy leaves a long cervix, which to my mind aids in holding the uterus in position. If the cervix is boggy and cystic a Shurmdorf conical enucleation or a modified Schroeder should be performed, if a trial of cauterization fails.

We have found that vaginal discharge is frequently not curable until a gaping introitus has been repaired.

Another mechanical cause of leucorrhea is a constriction in the cervical canal. Nothing short of a thorough dilatation will cure this. At times the circulatory disturbance caused by an abnormal retroverted uterus increases a leucorrhea. One of the most common causes of leucorrhea is the chemical and physical injury brought about by douching. Douching disturbs the chemistry, physical condition, and the bacterial flora of the vagina, and leads to desquamation of the superficial mucosa. Except as a temporary means of applying heat it has nothing in its favor. The more douches a woman takes the more she has to take and they become a pest. They have been forced upon women by those who sell douche bags and powders and by physicians in a moment of thoughtlessness. Medical tampons have the added objection that they become a habit, and many women used to the warmth and feeling of support given by a tampon become uncomfortable without them. The tampon becomes a necessity like a quid of tobacco in a man's cheek. After strong tampons and douches I have seen the whole lining of the vagina come away like the finger of a glove.

Under the heading of tumors come polyps, cancer, and cysts of the cervix. Though polyps usually cause bleeding, frequently they manifest themselves only by profuse discharge. Cervical polyps may be twisted off in the office and the base cauterized with the electric cautery. Corporeal polyps require curettage. Cystic cervixes respond only to the Shurmdorf conical enucleation or a modified Schroeder. Simple puncture of the cysts seldom cures the condition. Any suspicion of cancer demands a diagnostic curettage.

In nearly every case a discharge due to cancer is sanguineous, however if any doubt exists, we must not neglect a curettage even without a blood tinged discharge. Before doing a curettage, however, make sure that the temperature, pulse, and leucocyte count are normal.

In pregnancy the increased circulation of the cervix and vagina frequently increases a leucorrhea that previously was not objectionable. If not due to infection or cervical polyps described above, it is best left alone with an explanation of its cause.

Under congenital causes comes what is possibly incorrectly named congenital central erosion. This usually responds to cauterization. These unmarried women I prefer to treat from a general standpoint and resort to local treatment only as a last resource.

The most outstanding constitutional causes of leucorrhea are endocrine disturbances and the vaginitis due to senile changes. These frequently respond to internal secretory treatment, especially thyroid and ovarian extracts. The basal metabolic rate should always direct thyroid treatment.

It has been my experience that the constitutional or general factor should be forever considered in all local gynecological disorders. Under a proper regime of rest and exercise, hydrotherapy and all factors that improve general circulation and vigor, many of these discharges will cease. Especially does this obtain in therapy by diet with due consideration to vitamins and iron bearing foods. All factors, local and general, that tend to congest the pelvis will aggravate a leucorrhea. Even the mind as affected by reading and dwelling upon sexual matters, etc., can aggravate a leucorrhea. A very manifest cause of frequent pelvic congestion is chronic constipation.

Let me emphasize again, in closing, that this subject should be approached in every case through elimination of each and every one of the six fundamental causes of gynecological disorders, pregnancy, injury, infection, new growth, congenital deformity, and constitutional disturbance.

DISCUSSION

DR. J. E. COUNTRYMAN: I am sure everybody has a more definite idea of the definite causes and the definite treatment of this condition after hearing Dr. La Vake's very excellent paper.

There is just one thing about which I would like to speak, and that is the type of Leukorrhea that occurs in young girls where it is demonstrated that there is no question of venereal infection.

This condition so often is a result of a systemic condition, a lowered vitality, loss of weight, anxiety on the part of the girl or her mother as to the condition. In this class of cases it seems that local treatment is not indicated, is not necessary, but general building up of the patient, tonics, increase in weight, any method that will improve the general condition clears up the Leukorrhea in quite a short time.

It is quite a pleasure to hear the Doctor's idea as to the use of tampons and pessaries. That sort of treatment certainly has been rather carelessly done. Probably some people can employ a pessary that will be effectual in retroversion if they are good mechanics, but it should be remembered that treatment by pessary was devised before modern surgery. The avoidance of the tampon treatment certainly is to be commended.

Treatment by cauterization of the cervix for erosion does give good results.

There is another class of cases that is associated with profuse Leukorrhea occurring in women in the forties who have a very thickened cervix, an eversion and erosion, and where there is a question of malignancy, it is difficult to determine just when malignancy begins. In that class of cases I think a more thorough cauterization of the body of the cervix is good treatment. You certainly cure your thickened cervix, and if you have a malignancy you are giving good treatment. Any cutting operation will tend to spread the disease, but a thorough cooking operation, if it is done from within the cervix out, is beneficial. You can avoid the bladder; you have to remember the position of the bladder, and I think it will not leave any stenosis of the cervix. That is one of the objections I have heard to this treatment, that it will produce a stenosis, but I do not think it will. I think the result you get in a very thick, hardened cervix after a thorough cauterization, is sometimes quite remarkable.

THE ACUTE ABDOMEN*

BY E. A. REGNIER, M. D., F. A. C. S.

MINNEAPOLIS, MINN.

Acute abdominal conditions is a subject about which medical literature is replete and by some is thought to be rather a hackneyed one. However, from reviewing literature one is impressed with the fact that not enough has been written, or it has fallen to the lot of too few to acquaint themselves with facts concerning the management and end results of acute abdominal lesions.

The mortality and morbidity of acute surgical conditions of the abdomen is still too high to keep pace with results in other fields of surgery. For example, according to Willis, the mortality in appendicitis increased 31 per cent from 1901 to 1922, and in the same period the increase in gall bladder mortality was 72 per cent. There were 16,000 deaths in this country from appendicitis in 1928. About 2 per cent of deaths in Minneapolis are due to appendicitis, directly or indirectly. Statistics from the best clinics in the world on mortality from acute perforation of peptic ulcer range from 6 to 30 per cent in the first 24 hours, following perforation. Anything which will help focus attention to these significant facts and stimulate efforts to remedy the condition will be

a contributing factor in lowering these mortality figures.

Surgery of the acute abdomen is not infrequently the result of a flareup of a chronic pathological condition. In a great many cases a carefully taken history will reveal a long standing hernia, dyspepsia or gall bladder, or appendiceal history. It is also true that an acute pathological process may present a clinical picture which is not easily diagnosed, such as a Meckel's diverticulum, mesenteric thrombosis or acute obstruction due to internal strangulation, etc.

What are the factors which contribute to this high mortality in acute abdominal emergencies? Among these are the following: procrastination and the use of patent medicines, home remedies, and ill chosen adjuncts such as laxatives on the part of the patient in the hope a doctor will not be needed. This may more kindly be called an economic factor, although it is very prevalent in a strictly charity clinic, with which I am associated. Secondly, the physician who first sees the patient may not recognize the severity of the situation, or may conscientiously attempt to treat the early symptoms to relieve the patient, thus masking the picture, or he may have endeavored by elaborate laboratory tests, which are often

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time consuming and occasionally of no help, to arrive at a hairsplitting diagnosis which has delayed treatment for 24 hours. Thirdly, the desired result in a given case is jeopardized by an untimely or unsuitable operation, granting that the virulence of the disease or debility of the patient did not preclude a favorable outcome.

By untimely operations I refer to a hasty operation on a bleeding gastric ulcer, or an acute salpingitis, or an uncomplicated acutely inflamed gall bladder, or a subacute perforation of a peptic ulcer. By unsuitable or ill chosen operations, I refer to complicated operations for acute perforated ulcers when simple closure in a potentially infected field would be much safer, or to extensive intestinal resections or anastomoses in acute obstruction. These patients often die of too much surgery under circumstances present. Constructively speaking, the desirable measures to stress are early diagnosis and early treatment, and particular judgment in preoperative, operative, and postoperative management. A two hour preoperative delay to prepare the patient may be the means of avoiding an operative death, likewise an extra 30 or 45 minutes on the operating table may prove lethal, as may also failure to recognize and treat a postoperative complication.

The comparative safety of modern surgery in general has inspired confidence in the patient and in the surgeon. This has come about through development of diagnostic measures, better laboratory diagnosis, and research in physiology. The more common causes of the acute abdomen can be readily recognized and an accurate diagnosis should be aimed at in every case, at least as near as is compatible under existing conditions. I aim emphatically to deprecate the idea that exists too prevalently that opening the abdomen is the line of least resistance and the easiest means of settling the problem at hand. True it is that after taking a careful history, doing a thorough physical examination, and as thorough study as circumstances permit, a diagnosis of surgical abdomen justifies immediate action, but if more accurate localization is possible, the operative procedure is facilitated, the seat of pathology more quickly reached, and the end results are better.

I wish to mention here an old procedure which is not generally used and is often of great help in locating the site of origin of disease, and is likewise an aid in ruling out disease of distant origin, namely, the use of morphine. Lenander, Ross and Head, and still later James MacKenzie, through observation and experimental evidence

came to the conclusion that slight stimuli to viscera were insufficient to excite pain sensation in the abdominal organs themselves, but more severe stimuli such as inflammation or pressure, irritate sensory fibers in the cord which come from a corresponding area of abdominal skin, and in turn set up viscerimotor reflexes, through motor fibers, which proceed to a corresponding muscle segment. Thus if a severe irritation is set up in an intestinal segment, a sensory impulse stimulating pain fibers causes consciousness of pain in the spinal segment supplying that area, and the pain is referred to a corresponding skin area on the abdomen, and not to the viscus from which the irritation arises. By this segmental distribution of sensory and motor enervation, the muscles of the corresponding segment are simultaneously irritated, causing reflex abdominal contraction and rigidity. With this segmental distribution of nerves in mind, it is possible to localize the origin of pathology in the abdomen by using moderate doses of morphine to remove all extraneous stimuli and produce relaxation of all muscles, except those receiving fibers from segments corresponding to the site of irritation. This is especially helpful in hypersensitive nervous individuals, in children, and in early spreading peritonitis. An abdomen which appears tender and rigid throughout can, after giving morphine, become fairly relaxed, except for rigidity over an appendiceal abscess or other focus of infection.

By far the commonest cause of an acute abdomen in a patient who has had no previous abdominal surgery is the appendix. After ruling out appendicitis, the acute abdomen is usually one of the following, and about in this order of frequency: cholecystitis (with or without stones, empyema, abscess or biliary obstruction), perforated peptic ulcer (gastric or duodenal), salpingitis, intestinal obstruction (simple, with strangulation, internal hernia, volvulus, intussusception, new growths, etc.), ruptured extra-uterine pregnancy, acute pancreatitis, ovarian cysts or fibroids (with hemorrhage or torsion of the pedicle), diverticulitis, and mesenteric thrombosis, together with the acute traumatic abdomen.

In studying the acute abdomen it is well to keep in mind a few extra-abdominal surgical lesions as well as nonsurgical lesions which may resemble acute abdominal conditions. The most often encountered and the most closely allied conditions may be listed about as follows: Pneumonia, especially in children, kidney lesions, coronary sclerosis, caries of vertebræ, retroperitoneal hemorrhage, and lymphangitis, ileus (para-

lytic and spastic), enterocolitis, typhoid fever, lead colic, tabetic crises, visceral urticaria, and food poisoning.

Obviously this subject is too extensive to discuss in detail and only a few of the above subjects will be mentioned in this writing, after which, if time permits, an outline of differential diagnosis will be shown on lantern slides.

The appendix, while it is the most common seat of trouble in the abdomen previously nonoperated upon, is often confused with other lesions due to its varied position. The appendix may lie high in the right upper quadrant, in the pelvis, across the midline, or retroceally, as it is in about 20 per cent of cases. Appendicitis may be confused with cholecystitis, salpingitis or renal colic, and in case of localized peritonitis, or general peritonitis, the picture may be entirely masked. Appendicitis when complicated by abscess or ileus may resemble obstruction, or be accompanied by obstruction. In children particularly, an early pneumonia may produce abdominal symptoms simulating appendicitis. This occurs so often that a child is never operated upon at the Minneapolis General Hospital without first having a chest plate taken.

The reason for the still too high mortality in appendicitis is the fact that most cases are seen too late, or the condition is unrecognized until peritonitis, local or diffuse, has set in. The most common cause of this unfortunate situation, especially in children, is the almost universal administration of laxatives to a patient complaining of abdominal distress. The laxative still seems to be the cure-all paramount in all households, is responsible for many cases of peritonitis, and contributes generously to morbidity and not a little to mortality in appendicitis. A good slogan for laxatives among the laity, and unfortunately with some of the profession also, seems to be "the first thought in abdominal distress" or "if a laxative doesn't cure me, I'll call a doctor." While my experience is still limited, I have not yet found an indication for the use of laxatives in surgery. Records of the Minneapolis General Hospital for the past five years show a total of 527 appendectomies, with a mortality of 7 per cent. Of the 451 cases in adults there were 171 acute, 226 suppurative, and 54 of the interval type. 226 suppurative cases had a mortality of 11.6 per cent, 171 acute cases 6.4 per cent, and .8 per cent in the interval cases. Of the 76 cases occurring in children 24 were acute and carried a mortality of 12.5 per cent, in the 47 suppurative cases a mortality of 12.7 per cent, and in the 5 interval cases there was no mortality. This

makes a total mortality in children 11.7 per cent. Of the 76 cases occurring in children, 62 per cent were complicated by local or general peritonitis upon admission. This accounts for the high mortality in children.

In my opinion, once a diagnosis of acute appendicitis is made, the operation should be done immediately, irrespective of the course of the disease. Likewise if an acute appendicitis cannot be ruled out, the abdomen should be opened. As a rule it is best to take out the appendix even in the presence of peritonitis, unless the patient is moribund or the appendix is inaccessible without prolonged delay or the opening of new avenues of infection is necessary. Convalescence is smoother and a second operation is obviated by so doing. Obviously in the presence of a large localized abscess in a very sick patient one should aim to open over the abscess without invading the peritoneal cavity or spreading the infection, but even in these cases, if the appendix is accessible it is best to remove it. In most all cases a rectus splitting incision is best; it permits of ample exposure, shortens the operative time, and does not add any risk.

I feel the same about operating upon any case of acute abdomen, even though a general peritonitis is present. Many men advocate waiting for localization to take place before operating, but barring a couple of hours in which to administer fluid, etc., I cannot see any gain in waiting. It is like waiting to call the fire department to a smoke-filled house, until flames can be seen. Given a case of diffuse peritonitis, how is localization going to take place or the patient's condition improve if the infection is fed through a fecal fistula or a perforated ulcer or a gangrenous bowel?

The sequelae of late operations on the appendix with perforation may be manifold. According to Deaver, one out of twenty develops a fecal fistula. By far the most devastating complication is intestinal obstruction, either functional or mechanical. If mechanical, an enterostomy under local anesthesia is indicated immediately. If the obstruction is functional due to ileus, it can usually be relieved by symptomatic measures, restriction of all foods and fluid by mouth, gastric lavage, frequent use of rectal tube, hypertonic saline and glucose by vein, and occasionally intramuscular pilitrin. A case of peritonitis that begins to vomit, has a rise in pulse, and distention, with or without colicky pain, has ileus or obstruction and needs diligent watching. I believe the best way to prevent ileus is by feeding the patient, and I always give patients a full diet of soft, well cooked foods twelve hours after operation; that

is, after the operative nausea has ceased. I believe this is especially important in peritonitis cases. The only cases not fed a full diet the day following operation are gastric or intestinal resections, or anastomoses. All patients are given

hypodermoclysis of normal saline three to five thousand (3-5000 c.c.) daily, and 10-20 per cent glucose by vein plus 5-10 per cent saline if indicated. Enemas are used only on the third or fourth postoperative day to evacuate the bowel.

NON-SURGICAL AND EXTRA- ABDOMINAL SURGICAL LESIONS ETC.

Disease	Age Sex	History	Pain	Temp.	Pulse	Resp.	Tenderness	Rigidity	Other Findings	Laboratory
APPENDICITIS	XX	Previous Attacks, 75%	100% Epigastric RLQ. or Rt. Abdomen	99°-101°	Early N-+	N	Rt. L. Abd.	+RLQ. or Rt. + Abd. or Lumbar	Late, Mass in RLQ. Peritonitis, Local or Diffuse	WBC + Diffuse +
PEPTIC ULCER PERFORATED	M+	GI History	Sudden Sharp Severe Upper Abdomen	Early N	Early N	Thor. N-E	Upper Abd. Early Diffuse	Boardlike	Late General Peritonitis	Leucocytes N Gas in Abd. Cavity
CHOLECYSTITIS	35 F+	Chronic Dyspepsia	Attacks RUQ. Rt. Scapula	99°-103°	N+	N	RUQ. Deep	RUQ.++	Jaundice Mass	Leucocytes Bile in U. X-Ray
ACUTE SALPINGITIS	15 F	Previous Infection GC. Etc.	Lower Abd.	101°-4°	+	N	Pelv. L. Abdomen	Lower Abd. Diffuse +++	Pelvic Mass, Disch.	Leuco. Alb. Pus in Urine Smears
INTESTINAL OBSTRUCTION	XX	Previous Surg. Hern. Constipat.	Paroxysmal Colicky	N	N	N	Diffuse	Moderate ++	TYM. Borborygmus—Distention Vomit—No Stool	Gas in Small Int. Alb. in U. Blood Chem
ECTOPIC PREGNANCY RUPT.	16 F	Irreg. Flow Missed 1 Period	Sudden with Collapse, Shock, Pallor, Etc.	N	++	N	Diffuse More in Lower Abd.	Moderate ++	Pelvic Mass, Fluid in Perit. Cav. Weak	WBC +
PANCREATITIS	40 F+	GB. Hist. U. Abdomen Discomfort	Excruciating Upper Abd. To Back	N	110 T*	SI*	++++ In Epig.	++++ In Epig.	Collapse Shock—Vomit Cyanosis Toxic	Usually Alb. Occ. Sugar in Urine
OVARIAN CYST TWISTED PED. OR HEMORRH.	25 F	Pelvic Tumor Menst. Dys.	Sudden Sev. Lower Abd.	N	+	N	L. Abd. Midline	Moderate L. Abd.	Vomiting, Mass Pelvic	
DIVERTICULITIS	XX 35	Constipation Tenesmus	Severe Sudden	+	+	N	Marked and Localized Early	Marked	Mass LLQ. Toxic Rectal Exam.	Leucocytes Stools + BL
MES. THROMBOSIS	30 X	Cardiac Lesion Arteriosc.	Severe Sudden	N+	N+	N	Diffuse	Marked ++ Early	Vomit—Distention—Collapse Int. Obs.	X-Ray as in Int. Obs.
PERF. BOWEL TBC; TYPHOID	XX	Disuse Constitutional	Severe Sudden	++	++	T*	Diffuse	++++	As in Peritonitis	Air in Perit. Cavity, Ileus
PRIMARY PERITONITIS	25 F+	Acute Inf.	Moderate	+++	++	+	Diffuse	Generalized, Doughy	Umb. Protrudes Vomit, Ileus	WBC +++++ Smears
TRAUMATIC ABD. LIVER SPLEEN PANC. BLAD. BOWEL, KIDNEY	X M	+	Severe	N-E	N-++	N-	++++	++++	Fluid in Flank	X-Ray Urine
SECONDARY ABSCESS	XX	Previous Perit.	Moderate Localized	++	++	++	++	+++	Toxic	Albuminuria WBC + or - X-Ray
PNEUMONIA (ESP. CHILDREN)	XX	Onset	Referred	+++	++	++++	++	(Try M.S. ++ Morph.	Chest Exam. Facies	X-Ray WBC+
SUBDIAPH. PLEURISY	XX	Cold, Etc.	Referred to Shoulder & Neck	N-+	N-+	++	+ Upper Abd.	+ Upper Abd. (Try M.S.)	Chest. Exam. History	X-Ray -
CORONARY DISEASE	40 X	Cardiac / B.P. Hypertension	Anginal Radiates to Precordium	N	N	N-+	N to Inconstant	Give M.S.	ECG.	
CARIES OF VERTEBRAE	XX	Chronic	Referred	N-+	+	N-	Mod. Ref.	Mod. Ref. Perispinal Muscles	Pain ++ Spine Posture	X-Ray +
RETROPERIT. LYMPHANGITIS OR HEMORRH.	XX	In To Abd. or Back or Inf. Pelvis	+	N-++	++		Deep	+++	Distention Ileus, Toxic Ing. Nodes	Leucocytes +
ILEUS PARALYTIC; SPASTIC	XX	Other Illness Present	+-	N	N-++	N-+	+ Diffuse	+ Diffuse	Vomit—Distention—No Peristalsis	Gas in All Bowe X-Ray
ENTERO-COLITIS	X F	Chronic Int. Dysp. Lax. Etc.	+ Colicky RLQ. L.L.Q. Tenesmus	N-+	N	N	+ Over Colon RLQ.	+ Inconstant M.S.	Nervous Types	Stools X-Ray Spastic Colon
KIDNEY LESIONS	XX	Dysuria	+++ Lumbar Groin Pelvis	+to ++	N-+	N	+ Slight - Lumbar Lower Abd.	+ Lumbar Lower Abd.	Murphy Perc. Pyelogram Palpable Kidney	X-Ray + Urine + Cystoscopic +
TYPHOID	XX	+	With Perforation	P* 102, 104	-	N	Diffuse	Diffuse	Blood Rose Spots	Leucopenia Possible Widal
FOOD POISONING	XX	+	Colicky Diffuse	101-2	++	N	Diffuse	Inconstant	Enteritis Vomiting	Stools Mucus Watery
VISCERAL URTICARIA	XX	Other Urticaria	Colicky	N	N	N	Slight to No	Slight to No	Skin Urticaria	Sensitization Tests
TABES	30 M	Lues Exposure	Severe Girdlelike	N	N	N	No	Transient	Neurological Well Between Attacks B.P.	Spinal Fluid Wassermann
LEAD COLIC	30 M	Occupational	Severe Epi-Gastric Colicky	N	N	N	-	-	Anemia-Lead Line-Nausea & Vomiting Neuritis, Constip.	Lead in U. and Stools—Stippling Albuminuria

* Pulse - thready * Respirations - shallow, thoracic

N+ = Slightly above normal, etc.

N- = Slightly below normal, etc.

+ = Fever present or pulse elevated.

N-+ or N-++ = Normal to slightly or moderately increased and

++++ = Markedly increased.

Age of onset is usually after 35 years, etc.—Refers to age of onset.

A patient with postoperative distention should not be treated or abused with a lot of enemas containing chemical irritants. They exhaust the patient, often must be siphoned off, and accomplish nothing that cannot be done by less heroic means.

The diagnosis of perforated peptic ulcer is seldom difficult. The sudden onset of severe epigastric pain, followed immediately by boardlike rigidity, which soon spreads to the entire abdomen, the patient frozen to his bed, i.e., he refuses to be moved for fear of pain, make the diagnosis practically certain. A fair percentage of these patients give no history of ulcer at the time, but later when relief is obtained one can usually obtain a gastric history. Once an abdomen of this degree of rigidity has been palpated it can never be forgotten. Perforation of the acute type with free spreading peritonitis usually occurs in a chronic peptic ulcer, although perforation of a marginal ulcer at the site of the gastro-enterostomy occasionally occurs. In my opinion an acute perforation of a duodenal or gastric ulcer is best treated by simple closure of the perforation. In the majority of cases this is followed by complete relief. Attempting extensive resections and gastro-enterostomies or any prolonged procedure in a potentially infected abdomen is not good surgical judgment. Those cases of multiple ulcer or stenosis needing extensive surgery are best treated at a secondary operation. Our records at the Minneapolis General Hospital show a definite increasing mortality in cases treated with too much surgery at operation for perforation. Mortality statistics in all large clinics range from 6-10 per cent in the first 12 hours, 15-31 per cent between 12 and 24 hours after perforation, and after 24 hours the mortality rises to 70 per cent. One of our staff reviewed all the cases last year, 53 cases of acute perforation, with a mortality of 24.6 per cent.

The gall bladder is responsible for many acute abdomens. The diagnosis is usually not difficult, unless complicated by pancreatitis. It is usually possible to obtain a history of chronic dyspepsia, with or without colic, occasionally jaundice, nausea and vomiting, food idiosyncrasies, etc. On examination there is pain, tenderness, and rigidity in the right upper quadrant. Of late years there is a tendency to operate on acute gall bladders, which I believe is anything but conservative. Unless complicated by high fever, progressive jaundice, etc., in other words, unless the case is fulminating, it is better treated symptomatically until the acuteness subsides. If the ultra acute gall bladder does not readily subside on manage-

ment in a few hours, it is best to operate and drain the gall bladder. Obviously if the disease is limited to the gall bladder itself with no peritonitis or cholangitis, hepatitis or pancreatitis, it is safe to remove the organ, but never in an emergency.

A very common cause of the acute abdomen and one attended with an entirely too high mortality, is intestinal obstruction. This subject like appendicitis has been described in detail and the literature of the last hundred years is replete with it, yet the mortality figures are no better than they were fifty years ago. Here is where procrastination or failure to recognize the condition and operate early is fatal. Intestinal obstruction may be a simple mechanical one, or one of strangulation. In the former the cause may be a band of adhesions or a new growth, such as an annular carcinoma, shutting off the continuity of the bowel; in the latter there exists loss of continuity plus strangulation and loss of circulation, tissue necrosis, early absorption of toxins, and early death of the patient. Time does not permit going into the many theories of the cause of death in obstructions, but it is a known fact that a patient with simple obstruction may be kept alive two to four weeks by supplying salt, fluids, and glucose, while in strangulation obstruction all is in vain unless the strangulation is relieved before the bowel becomes gangrenous. The work of Haden and Orr, Dragstedt, and many others has clearly demonstrated that loss of chlorides, urea nitrogen retention, and alkalosis, evident in obstruction, is a fatal toxemia if untreated. Given a patient (especially if previous abdominal surgery has been done), who suddenly begins complaining of colicky, crampy attacks of abdominal pain, with vomiting and obstipation, that is usually enough to warrant an operation to relieve obstruction. With this history it is possible often to visualize peristalsis over the abdomen during the paroxysm of pain, or by auscultation to hear borborygmi or metallic tingle over the site of pain. With the above picture—operate. X-rays will usually show gas in the small bowel, and may show fluid level in the small bowel. This condition in the adult is diagnostic of obstruction. An enema or repeated enemas may be expelled with small amounts of feces and gas in a case of obstruction, but this does not rule out obstruction. Gas can be formed below the point of obstruction and expelled with enemas and one should not be misled by this procedure. Early operation is all essential and should never be put off except for two or three hours to replete the fluids and chlorides.

I just want to mention the need of careful judgment and necessity of knowing surgical pathology in operating upon obstruction cases. Many lives are sacrificed by attempting to excise large tumors and do extensive intestinal resections and anastomoses in the face of obstruction. It is best to orient oneself before attempting extensive surgical procedures; relieve the obstruction, treat the existing toxemia, and await a later date to do the reconstruction work. While an enterostomy tube is not all that is to be desired, such a procedure or a colostomy or so-called extraperitonealizing or gunbarreling of the bowel is often all that can and should be done, especially in late cases. Finally many cases go on to a lethal termination with no attempt to relieve the dehydration and replete the blood chlorides.

Not infrequently an acute abdomen presents itself where appendicitis, salpingitis, diverticulitis and general peritonitis all come in for attention. Diverticulitis usually points to the left lower abdomen, and is apt to be localized early. There is usually a history of constipation and rectal tenesmus, occasionally mucus and blood. A rectal examination, proctoscopic examination, and barium enema may cinch the diagnosis. Salpingitis may show pelvic masses, pain and tenderness will be bilateral, and smears are usually positive for gonorrhea. The picture is sometimes one of peritonitis with no localization, and in the rare cases where salpingitis cannot be positively diagnosed and the other conditions cannot be ruled out, it is best to operate. In the event that acute salpingitis is found no harm has been done and much apprehension is relieved.

Acute pancreatitis should be considered in a case developing a sudden attack of epigastric pain accompanied by sudden shock and collapse. There is usually vomiting, a small thready pulse, often cyanosis, normal or subnormal temperature, tenderness, and deep seated pain, often referred to the back. The significant thing is the rapid course and the extreme severity of all symptoms. Most cases are diagnosed at autopsy but in the above picture the operation should be done immediately, and drainage direct from the pancreas or the biliary tract or both established.

Another clinical picture of shock and early collapse but not as fulminating is that of ruptured ectopic pregnancy. The history of menstrual irregularity plus the pelvic findings and fluid in the abdomen, rising pulse, air hunger, etc., usually makes the diagnosis certain and demands immediate surgery.

The traumatic abdomen may be one with perforation of the abdominal wall as in gunshot

wounds or stab wounds, or there may be no obvious external injury as in crushing or severe blunt blows over the abdomen. Given a history of trauma, one must consider the more common possibilities, namely, injury to liver, spleen, bowel, stomach, pancreas, kidney or bladder. Obviously in cases when the abdominal wall has been pierced there is only one way to find out what damage, if any, was done to viscera, and that is to make an incision and explore. In the other cases I know of nothing more perplexing. To observe and treat symptomatically in the face of so many possibilities requires fortitude; to rush in seems ruthless. The kidney and bladder can be ruled out without a laparotomy. All these cases have great tenderness and more or less rigidity at first, and often are in shock. Careful examination may reveal fluid in the flanks, as occurs in rupture of the liver or spleen. Fractured ribs over the liver or spleen is good evidence of possibilities of rupture. Rupture of stomach or bowel will give evidence of developing peritonitis, increasing rigidity, becoming exquisitely tender, and rigid over the area of rupture. The most common site of rupture of the bowel is the third portion of the duodenum across the spine, and in this event the pancreas or kidney or both may be involved. A ruptured spleen is best removed, as repair is not easy and removal is safer. In my experience a rupture of the liver is either so severe as to be outright fatal, or if less severe usually does about as well if untreated surgically. Again, as in all other cases of acute abdomen, experience, judgment, and interpretation of signs such as tenderness, muscle spasm and rigidity, beneath the palpating hand, will determine the procedure, and I believe in experienced hands, errors of omission will be more costly than errors of commission in dealing with the acute abdomen.

It is difficult to draw conclusions without having them sound like aphorisms, but if we are to draw any, I submit the following:

1. The acute abdominal emergencies are often acute flare-ups of long standing or quiescent pathology of abdominal viscera, and can to some extent be prevented by early recognition of symptoms and early treatment.

2. The occurrence of sudden severe abdominal pain accompanied by marked tenderness and extreme rigidity and spasm of muscles is usually evidence enough to warrant immediate operation.

3. Localization of the lesion is usually possible, is highly desirable, but not essential to proper treatment.

- 4. Laxatives are harmful in almost any illness, very harmful in organic abdominal conditions, and should be relegated to ancient medicine.
- 5. Enemas in obstruction are probably of no

diagnostic value, and may be extremely misleading.

6. Too much surgery is as bad as no surgery; meet the indication and complete the reconstruction when circumstances warrant.

THE COURSE IN FRACTURES AT MASSACHUSETTS
GENERAL HOSPITAL*

By THOS. L. HAWKINS, M.D.

HELENA, MONTANA

In traveling from city to city and from clinic to clinic one sees such a wide variation in treatment of fractures with apparently the same end results, that one is nonplussed as to which is the best method to follow. So perplexing may the methods be that no two procedures are the same, the only common denominator being the production of physiological rest and fixation. After such an experience, it is gratifying to find a course which conforms to fairly set rules and procedures, and varies in its execution only as individual staff members may.

For a number of years the fracture service of the Massachusetts General Hospital has offered a week's or ten days' intensive course in treatment of fractures to graduates. Dr. Charles L. Scudder heads the staff. Most of the lectures are given at the Massachusetts General Hospital, and the others at Harvard Medical School, where anatomical dissections are available. The course, which extends from 9 o'clock in the morning to 5 o'clock in the evening is divided into lectures with lantern slides and demonstrations, ward rounds in the hospital, and operative clinics. The lectures and conclusions are based on a careful survey of all the fractures admitted to the hospital over a period of years. The course is concluded by a dinner given at the Harvard Club of Boston.

The rating method employed at the hospital is, without question, most complete and still most simple. Fracture results are estimated at the end of one year. Uniform methods of examination and a simple method of recording the estimations are necessary. Those of you who are doing much fracture work, especially for industrial concerns or for insurance companies, will be interested in this rating:

The use of the letters A E F signifies "Anatomical Results," "Economic Result" and "Functional Result."

*Read before the Great Northern Railway Surgeons' Association at Glacier Park, Montana, June 29, 1931.

The use of figures: 1, 2, 3, 4 (A³ E³ F⁴) after each letter gives the percentage value to the final estimation, allowing a range of 25 per cent for each figure, thus: 1 equals 25 per cent. 2 equals 50 per cent. 3 equals 75 per cent. 4 equals 100 per cent.

ACCURATE RATING

There are four factors which make up the total of an *anatomic* result:

- 1. Length.
- 2. Alignment (total) by inspection and measurement.
- 3. Apposition } judged by roentgenograms taken in
- 4. Angulation } two planes.

Suppose a patient has normal length.....100%
Suppose a patient has poor alignment..... 75%
Suppose a patient has half apposition..... 50%
Suppose a patient has 10 to 15 degree angulation 50%

4) 275
68+%

The patient would receive A³ anatomic rating because 68+ per cent is nearer to 75 per cent in the gross rating.

Four factors make up the total of an *economic* result:

- 1. Same work as before, lighter, or heavier work.
- 2. Same pay as before, more, or less.
- 3. Same hours of work, more, or less.
- 4. Same volume of work, more, or less.

Suppose a patient has a lighter job..... 50%
Suppose a patient gets three-fourths former pay 75%
Suppose a patient works one-half as long each day 50%
Suppose a patient turns out one-third the volume
of work 33%

4) 208
52%

The patient would receive E² economic rating.

Four factors make up the total of a *functional* result:

- 1. Total functional result, subjective (asking the patient).
- 2. Total functional result, objective (by observation) muscle strength and staying power.
- 3. Joint movement above the fracture, as compared to the other side.
- 4. Joint movement below the fracture as compared to the other side.

Suppose the patient says he is as good as before....100%
Suppose, on observation, he has less power and movement on fractured side; can move the part (walk, or use his arms) about half as much as he did before..... 75%

Suppose the joint above has limited motion, estimated at one-third off normal..... 66%
 Suppose the joint below is normal..... 100%

4) 241
 ———
 85%

Functionally, the patient would be rated as F³.

Altogether, that patient would receive a rating of A³ E² F³.

The above rating demonstrates how simply fractures may be rated, and how the doctor may keep a careful check on his own results. While the basic principles in the treatment of fractures were laid down over a hundred years ago by the bone-setter, Thomas, whose splint we still use, still new procedures and conveniences continually change, and aid in the establishment of physiological rest and position.

By keeping a careful rating of all fractures, at the end of any given time, one may very easily see whether the procedures used are producing adequate results or not; and it is certain that if all fractures treated were properly rated, data would be obtained which would leave no doubt as to the proper or improper methods of treatment.

A uniform method of rating fracture end results used by insurance companies and industrial concerns and carried out carefully would, in a few years, give us valuable information as to treatment and results, and would be an important factor in determining a definite percentage of disability for compensation. We are all familiar with the fracture case, who in reality has some disability, but the problem of arriving at a just and equitable settlement is one which continually taxes not only the doctor's ability but also his conscience.

Emphasis is placed upon the time of treatment of a fracture. There apparently is no justification for delay in the adjustment of the fractured bone to its normal position. This does not mean that the general condition of the patient is overlooked, nor does it mean that shock can be disregarded, but it does mean that there are no pathological findings which justify delay until the swelling has subsided.

What might be looked upon as a radical view is expressed by Doctor Souter of Boston (not with the Massachusetts Hospital group), who advocates immediate reduction of fractures by means of block and tackle controlled by a scale.

It can easily be demonstrated to anyone's satisfaction that immediate reduction and juxtaposition eliminates a large percentage of swelling and pain and materially reduces the convalescent period—for example a Pott's fracture, immediately reduced and fixed either by cast or other appliances,

is within a few hours comparatively comfortable, and the cast may be applied quite snugly without much fear of damaging the circulation, since the swelling is controlled; first, by restoration to normal position and, second, by pressure of the cast.

Fractures of the shaft of the femur are usually treated by placing in a modified Thomas splint on a Balkan frame, or similar device, and skeletal, usually using the ice tongs. Fractures of the leg are, in a great many cases, treated by skeletal traction, using a Steinman pin or a Kirshnar wire for traction. Some members of the staff use skin traction where applicable, but in cases in which only a small area is available for traction, they do not hesitate to use skeletal traction.

The Steinman pin and ice tongs are instruments which should be in the armamentarium of every one doing fracture work. There are some advantages of the Kirshnar wire over the Steinman pin—for example the ease of inserting—but it is expensive and requires a motor, and is perhaps not necessary to one doing an ordinary amount of work.

Fractures of the neck of the femur are usually treated with a Whitman cast—some members of the staff use a pin, and, of course, that is used considerably by Smith Peterson. In applying a Whitman cast there are three things carefully watched: First, the leg should be abducted, markedly. Second, the foot should be everted and third, the thigh should be extended.

There is nothing which gives more consistently good results than this type of treatment of fractures of the neck. Cases of non-union may result from this treatment, nevertheless, it still has not been improved upon. Smith-Peterson has excellent results from the use of his pin in cases of non-union and absorption of the neck. The use of the pin in his own hand has given excellent results. In no small measure this is due to Smith-Peterson himself, who is a superlative operator and uncompromising in his technique. Bone pegs have a definite place and have some advantages over the pin.

The problem of Volkmann's contracture was discussed quite fully. A number of cases of paralysis were presented which had never had either a splint or cast, nor were there any signs of severance of the muscular spiral nerve by the fragments or evulsion.

Thousands of dollars have been paid by surgeons for judgments and in defense of law suits for this condition, when there was no evidence that the splint or the cast had anything to do with the paralysis. It was felt that the condition resulted from hemorrhage beneath the fascia, and,

following along this line, the treatment consisted in a fasciotomy and release of the hematoma. A quick return of the nerve usually follows the incision of the fascia.

While this procedure is particularly applicable to fractures of the upper extremity, the same principles hold elsewhere.

On the whole, the course is well presented in every detail. The end-results of all types of fractures are given as well as the methods used. On ward rounds the cases are shown and the operative methods demonstrated in the operating room.

No attempt is made to insist on the methods used.

There is no discrediting of other methods, and therefore no time wasted in lengthy arguments as to the proper manner to proceed. The staff frankly state that other methods may be equally as good, but in their hands, best results have come from the rules set down in lectures.

One evening is devoted to discussion of the disasters occurring—this is more in the form of a confessional. The disasters are the same that will occur to all of us and, like death and taxes, are inevitable.

THE HOME TREATMENT OF THE TUBERCULOUS PATIENT

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Much has been written about the institutional care of the tuberculous patient. Its advantages have been well emphasized in that it provides for the care of the individual patient, serves as a preventorium, and aids in the prevention of tuberculosis. But we must still treat the majority of the patients in the home.

Since the middle of the last century especial interest and attention has been devoted to the prevention and treatment of tuberculosis. The diagnosis of the disease, because of the complexity of the symptoms, has stimulated the best clinicians. The great variation in the complaints, such as cough, chest pains, expectoration with or without blood, general malaise, loss of weight, night sweats, fever, shortness of breath, hoarseness, and many other symptoms of the "common cold" has made the diagnosis very difficult. The X-ray has done much to increase our knowledge regarding the extent of the involvement, but we must still rely a great deal on the examination of the chest, including inspection, palpation, percussion, and auscultation.

After the diagnosis has been made, the method of treatment should be based upon the extent of the lesion and the general condition of the patient. Whenever possible, the patient should be placed in a well-equipped, modern sanatorium. In many cases this is impossible because there is no sanatorium available, or it is difficult because of home and economic conditions. After all those who can be hospitalized have been placed in sanatoria, we still have many who must take the treatment in the home.

Although sanatorium life is the ideal way of caring for the tuberculous patient, there are many unrealized possibilities open to the patient who must take the home cure. It is the purpose of this paper to pass on some of the knowledge gained from our experience in dealing with home patients and to show how home treatment can be effective.

It seems as though the initial step should be the development of a proper attitude toward the disease. Many physicians pay no attention to the psychological aspect of the case, but this is just as important as the physical. The patient must have an intense desire to regain his health—a desire strong enough to cause him to forego present pleasure for more permanent future happiness.

In a sanatorium this hope and desire to regain health is obtained to a great extent from the environment. The patient sees others about him with cheerful dispositions and soon "catches the spirit of the cure." He sees others on exercise, and they instill the entering patient with the idea that there is something to be gained by careful treatment. In the home the helpful environment is absent—the patient cannot be inspired by the example of others on the cure. An understanding physician can do a great deal to establish the proper attitude, and with him lies the real responsibility.

The doctor must have an active interest in the patient. His cheerful personality and will-power should stimulate the patient to maintain a healthful state of mind and to carry out more rigorously the prescribed treatment. Of course, the patient of average intelligence is less difficult to

handle. After a thorough explanation of the nature of the disease and the treatment, he can usually see the necessity of strict obedience to the doctor's orders. The determination to get well is essential. With it comes the will-power which enables him to reach a certain end. The patient that has this determination and will-power is fortunate. The physician must not forget that a patient who lacks this decision will develop it under the proper stimuli and guidance. If the patient will follow straight through the course of the treatment with the same determination, then both the patient and physician are fortunate. However, too often the patient becomes discouraged and is apt to stray from the regular care. At that time the physician should know his patient well enough to enable him to say the things that will again bring forth the proper attitude.

The establishment of a proper frame of mind is undoubtedly the greatest difficulty to be met outside the sanatorium. The remaining part of the treatment is essentially the same in the sanatorium and in the home.

One of the first problems to be solved in starting a patient on home treatment is the finding of a proper location for the patient. This is the most difficult situation in the majority of homes; however, it can usually be obtained by studying the arrangement and making a few small changes. Sanatorium similarity can be obtained if a large south bedroom is available. Even better is a large bedroom with an adjacent sun porch. Where neither of these is obtainable, suitable arrangements can be made if one is dealing with an average home.

After the patient is properly located, routine treatment with its systematic and hygienic living must be started. Although much difficulty arises in securing in the home the systematic routine of the sanatorium, it can be obtained if one is dealing with an intelligent, willing patient and a co-operative family. Of course more effort and patience are required to obtain the same results. On the other hand, if one is working with an unwilling patient, the physician's attempts to establish a routine treatment will be without reward.

Regular hours for meals, rest, bathing, etc., are essential. The average patient cannot readily see the advantages of this routine and often drifts into his usual way of living. This is disastrous. Regular rest hours must be developed so that the sick one may relax and sleep if possible. Often, in order to accomplish this, the visiting hours must be limited and friends impressed with the importance of leaving early at night.

Along with the regular meal hours must be included the diet. The physician should not take the diet for granted, but should carefully instruct the patient and household. In many cases the number of calories should also be estimated and the weight of the patient observed. The proper food is easily obtained if one has a good cook who is willing to co-operate. The manner in which the food is served is also very important. The appetite of a convalescent is ordinarily poorer than that of an active person and therefore must be stimulated by a pleasant atmosphere and well-served meals. An attractive tray with appetizing food is a wonderful aid to digestion and nourishment.

Aside from the regular care, the administering of special treatments must be considered. The special kinds of treatment the patient often needs are difficult to carry out in the home. Phrenicotomy and thoracoplasty must be performed in the hospital or sanatorium, and after the patient has recovered sufficiently from the operation, he may return to the home. If the patient is to be given pneumothorax, he should be in a hospital or sanatorium until a suitable collapse is obtained. When the treatment has been started in an institution, it can be continued in the home. Frequently, with throat and gland trouble, the use of a sun lamp is advisable. A lamp may be secured, and if the physician's directions are observed, treatment may be given in the home.

Routine care and special treatment having been decided upon, ways and means must be found to keep the patient observing the routine. Those who have taken care of the tuberculous in the home understand how easy it is for the patient to drift into careless habits. Consequently the patient in the home must have the closest contact with his physician. There are many who think this is impossible unless the patient is in a sanatorium. But the physician usually will find that two or three calls a week are sufficient to give the patient this contact. This enables the doctor to keep up the morale of the patient, to see that he is faithfully carrying out the treatment, and to examine and check his physical condition. This also gives an opportunity for the doctor to look over the temperature and pulse records which should be kept as well as a schedule of the daily routine of life.

In the sanatorium trained nurses help carry out the treatment and take charge in the doctor's absence. In the home they usually are absent, but they are not always essential in the treatment of the tuberculous. Unless the patient is running a high temperature or has some unpleasant com-

plication, it is not necessary to have a nurse, as the nursing can usually be left to some member of the family. However, in an advanced case, if the patient is running a high temperature or has serious complications, a trained nurse is essential.

Tuberculosis is different from most other diseases with the exception of diabetes and heart trouble. As in diabetes and heart trouble, the tuberculous patient, in order to take the cure satisfactorily, must know about the disease; consequently the physician who cares for him must be a good teacher. In order to do this the physician must spend much time with the patient. This of course is closely allied with the psychological aspect of the case, as the patient must have a knowledge of the disease and its nature in order to develop the necessary will-power.

If the patient is co-operative, he will carry out all the prescribed treatment. However, it must repeatedly be shown to him that treatment is necessary to obtain health, and it must be carried out in every detail. In the treatment of the tuberculous, the patient must have absolute confidence in his physician. Usually he can be taught that disobedience to the doctor's orders is hurting only himself. If he does not care to obtain health, he

will fail in the sanatorium as well as in the home.

Another problem to be solved is the amusement of the patient during the hours he is awake. Recreation is more difficult in the home than in the sanatorium. There are no programs arranged and no occupational therapy. However, the patient can read, listen to the radio, make things with the hands, etc., for all of these are easily obtainable in the home. The doctor can do a great deal in enlisting the co-operation of the household in planning recreation.

Most physicians will agree that, for the majority of people, the sanatorium is to be preferred to the home. However, as stated before, because of the lack of institutional accommodations and because of home and economic conditions, many are cared for in the home. A patient can regain his health as well in the home as in the sanatorium, provided he has an average home and a strong will-power.

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This is the thirteenth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

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THE GASTRO-INTESTINAL TRACT

Introduction

A. Value and Uses of X-ray Examination

It is in the gastro-intestinal tract where the x-ray examination finds both its greatest usefulness and its greatest accuracy. Hardly any other method of diagnosis in medicine is as accurate as the x-ray examination of the esophagus, stomach, and duodenum for carcinoma or ulcer. Statistical reports of an accuracy of 90 to 100% have been repeatedly published from good roentgen departments.

Diseases of the gastro-intestinal tract produce symptoms which are very difficult to evaluate. The x-ray examination with the barium meal permits of a direct visualization of the inner surface of these organs which is frequently superior

even to surgical exploration or to the gross pathological examination. We have recently learned that a good x-ray examination may demonstrate an ulcer of the stomach or duodenum which can only be demonstrated surgically by opening into the organ. Occasionally even the gross pathological examination of a resected stomach may fail to reveal clearly a carcinoma which was demonstrated definitely on roentgen examination. This is due to the fact that both disturbances in function and the gross pathological change itself can be made out on x-ray examination.

On the other hand, the examination of the gastro-intestinal tract is by far the most difficult procedure in the field of x-ray diagnosis and may be very unsuccessful in any but the most skilled and experienced hands. The technical methods

employed in making films and the technique of fluoroscopy are both exceedingly important but will not be dealt with here as they are not within the scope of these notes.

At present x-ray examination of the gastro-intestinal tract attempts to determine the following:

1. *Esophagus*—ulcer, carcinoma, spasm, diverticulum, fistulae, compressions, and displacements.

2. *Stomach*—all the above and in addition benign tumors, syphilis, post-operative conditions, chronic gastritis.

3. *Duodenum*—chiefly ulcer, adhesions, diverticula, rarely tumors, secondary compressions, and displacements.

4. *Remainder of small intestine*—obstruction, diverticuli, enteritis, displacements, rarely tumors.

5. *Colon*—carcinoma, benign tumors, tuberculosis, colitis of various types, diverticuli, spasticity, displacements, adhesions.

B. *Technical Considerations*

1. *Value of fluoroscopy.*

This gives the best opportunity for the study of motility, mobility, peristaltic activity, and appearance in a variety of positions. It permits manipulation of the organs with the hand which is the most important phase of gastro-intestinal x-ray diagnosis.

The disadvantages are that it does not give a permanent record and may fail to reveal the smaller changes.

2. *Value of films.*

These give better detail, revealing the finest changes, and leave a permanent record. Single films are valueless except in the very gross changes. Multiple films are necessary to assure the constancy of any abnormality.

3. *Combined method.*

Fluoroscopy as the primary method with a number of films made in addition is the best method. If possible films should be made under fluoroscopic control to demonstrate more clearly abnormalities which are suspected during fluoroscopy but are not entirely distinct.

4. *Special technical advice.*

a. A very thick barium sulphate paste should be used in the esophagus.

b. Examination of the esophagus prone as well as standing in all positions is advisable.

c. In examination of the stomach the single meal method is best if practicable.

d. Two mixtures should be used for the stomach and duodenum. The first is a very small amount of a thin mixture of barium sulphate and water to permit demonstration of the rugae of the stomach and filling of posterior wall niches.

The second is eight ounces of a thicker mixture filling out the contours of the stomach. Manipulation under the fluoroscopic screen is of the greatest importance.

e. Repeated examination, one, two, and four hours after the meal may reveal changes in the small bowel. Examination at 6 hours reveals the caecum and at 24 hours the colon. Examination at 12 and 18 hours is also valuable especially in tuberculous colitis.

f. The addition of a tablespoonful of an emulsified mineral oil to the meal seems to help fill the appendix and make evacuation of the barium easier.

g. Examination of the colon should be made both with the barium meal and the barium enema. The former determines motility but gives poor visualization of the whole colon—the latter should fill out the whole colon permitting its contours to be well studied.

h. In the colon examination the caecum should be filled until the enema passes through the ileo-caecal valve to be certain of filling the whole caecum.

i. The injection of air after evacuation of the barium enema may permit visualization of ulcers or polypi of the colon which cannot otherwise be seen.

j. The examination of the stomach should be made in all positions upright and also prone.

k. Films of the stomach should be made in all directions. They are best taken during expiration. Films should be made very rapidly.

l. The right oblique prone position is often the best for visualization of the duodenal bulb in the hypersthenic—type of individual.

m. Special methods for making films rapidly are of some importance. The use of pressure on the stomach or duodenum by means of some substance not opaque to x-rays is of great value in the demonstration of ulcers and small tumors.

THE ESOPHAGUS

A. *Normal Appearance.*

1. A long narrow tube smooth in contour, sharply outlined, varying in size is shown.

2. Constrictions are present below the larynx, at the arch of the aorta, and at the cardiac end.

3. Peristalsis can be seen as a wave of constriction passing downward, usually not narrowing the esophagus very much.

4. Air is visible, mixed with barium, as swallowing occurs. Bubbles of air may give the appearance of a defect in the lumen but change rapidly.

5. The esophagus almost bisects the chest antero-posteriorly lying 2-3cm anterior to the spine throughout its extent until it reaches the diaphragm where it curves anteriorly.

6. Alternating longitudinal lines of increased and decreased density can be made out at the distal end representing folds of mucous membrane.

7. The esophagus turns rather abruptly forward and to the left at its distal end.

B. General Considerations of Pathology.

1. Changes in position—displacements occur;

- a. Posteriorly by enlargement of the left auricle, anteriorly or from side to side by enlargements of the arch or descending aorta.
- b. Mediastinal tumors depending upon their location.
- c. Pericardial effusion displacing posteriorly, pleural effusion only slightly to one side.
- d. Fibrosis or mediastinitis retracting to one side.
- e. Spinal diseases displacing anteriorly or laterally.

2. Changes in form.

- a. Dilations and protrusions from diverticuli and regurgitation from stomach, possibly associated with gall bladder disease, extensive carcinoma, old age.
- b. Defects in lumen or narrowing from carcinoma, spasm, pressure, strictures.

3. Changes in size. Considerable normal variation occurs.

(1) Increase—greatest from cardiospasm but some increase above the area of involvement may occur in carcinoma and strictures.

(2) Decrease—carcinoma, stricture, atresia.

C. Pathology of Esophagus

1. Diverticula.

These are most common in the extreme proximal and distal ends and are rounded or angular pouches protruding from the lumen of the esophagus and retaining the barium.

a. Traction type—these may be secondary to adhesive processes and are triangular in outline, usually pointed and do not tend to retain barium.

b. Pulsion type—rounded pouches, often very large, bulbous ends, may show air in upper portion in upright position. Tend to retain barium for long periods of time.

c. Combination types and multiple diverticula occur.

d. Spasm, a smooth narrowing of the lumen below the area involved is often associated.

2. Fistula.

Rarely a direct connection with the trachea is present usually from a tumor. The barium can be seen to pass directly into the bronchial tree which becomes clearly visible.

3. Cardiospasm.

a. Enormous dilation of the esophagus takes place which may simulate a lung tumor or mediastinal mass when not filled with barium. The shadow is marked due to retained food and fluid. The characteristic of this shadow is that it passes up into the neck.

b. The spasm may be transient giving only slight dilation.

c. Peristalsis is greatly increased.

d. There is a smooth cone shaped distal end of the esophagus, often completely closed. Barium may pass through at intervals however.

e. No filling defect and no irregularity are present.

4. Stricture. Usually secondary to swallowing lye. There is a diffuse narrowing, usually slightly irregular with no sharp distinction between the normal and abnormal.

5. Congenital atresia.

This may be seen in infants and is represented by a deficiency in the tube, usually high up.

6. Carcinoma.

This may occur anywhere in the esophagus and manifest itself as an obstructive defect in the lumen.

a. Filling defect—absence of barium at one or several areas in the lumen of the esophagus constantly the same.

b. Irregularity usual although rarely the contour of the defects is smooth.

c. The defect occasionally annular narrowing the esophagus down in a smooth rounded fashion.

d. A tumor mass. An area of increased density may be seen in the mediastinum in the region of the defect.

e. Some dilation of the esophagus above the lesion but it is not marked.

f. Peristalsis slightly increased.

g. Obstruction either complete or incomplete.

h. Differentiated from spasm by the constancy of the defect, its irregularity, protrusion into the lumen, absence of marked dilations or peristalsis, presence of tumor mass.

D. Value of X-ray Examination

Practically all the diseases of the esophagus are amenable to Roentgen examination and it is the most important means of diagnosis. It is also

valuable in localizing the exact site of the lesion for purposes of therapy.

THE STOMACH AND DUODENUM

A. Normal Appearance of Stomach

1. *Size.*

This varies with the type of patient and the quantity of the meal. Normally the stomach is empty except for a gas bubble in the cardia. The barium meal fills it out.

2. *Shape and position.*

This varies with the type of individual. In general the hypersthenic type tends to have a "steerhorn" shaped stomach lying high in the abdomen and transversely across. The asthenic type tends to have a "J" or "fishhook" shaped stomach lying rather low in the abdomen. In these the barium meal tends to sink to the lower pole from lack of tone. In the hypersthenic individual the pylorus is at the same level with the remainder of the stomach. In asthenics it turns upward.

Both shape and position vary with the mental state of the individual, the type of meal given, and with many other factors. Change in position of the body produces striking changes in shape and position of the stomach. With the patient prone the stomach tends to pass upward into the epigastrium and become transverse.

3. *Passage of meal.*

The meal passes into the stomach on the lesser curvature side and passes downward in a funnel shape, usually remaining as one mass until it reaches the pyloric end.

4. *Anatomical divisions and nomenclature.*

The stomach may be divided into a proximal third—the cardia or fundus; a middle third—the pars media; a distal third—the pars pylorica. According to Forsell the nomenclature is fornix, corpus, canalis, pylorus.

5. *X-ray appearance and normal variations.*

a. The cardiac end in the upright position is gas filled and irregular in contour. In the supine position it appears rounded and lies in close apposition to the left diaphragm.

b. The lesser curvature, the shorter medial side, and the greater curvature, the longer, lateral side are the two contours seen in the ordinary postero-anterior position. Between them lie the anterior and posterior walls superimposed. In the oblique or lateral positions the anterior and posterior walls tend to form the contours of the stomach.

c. In general the contours of the stomach are smooth, rounded, changing in appearance. On the greater curvature side there may be consider-

able irregularity due to large veins and heavy rugae. This varies greatly with different individuals.

d. The greater curvature may show the following variations:

- (1) Marked irregularity from rugae or veins—these change in appearance from time to time and the wall is flexible on manipulation.
- (2) Indentation in the middle third from abdominal muscles and the costal margin. This changes with respiration, is smooth and flexible.
- (3) Indentation in the cardiac third from the spleen.
- (4) A diffuse indentation from a gas-filled dilated colon which will also produce increase in rugae markings.

e. The lesser curvature showing only longitudinal rugae and these sparingly.

f. Rugae or folds of mucosa well shown on the posterior wall by giving a small amount of barium and producing pressure. The appearance is that of alternating longitudinal stripes of increased and decreased density, the stripes becoming more marked in the pyloric portion and more transverse on the greater curvature side.

g. Spinal pressure especially in lordotic individuals producing an apparent defect in the middle portion of the stomach. Usually the rugae can be seen through this defect.

h. The cascade stomach giving the appearance of biloculation in the postero-anterior view, due to pressure from behind by a gas-filled colon and to the fact that the cardiac third is placed in a very posterior position. Rotation of the patient will indicate the sharp angulation due to these two factors. In the postero-anterior view such a stomach appears very abnormal.

6. *Mobility.*

The stomach should be fairly moveable especially in its inferior portion. The walls should be flexible, moving away from the hand upon manipulation.

7. *Pristalsis.*

Waves of constriction begin normally near the cardia and pass toward the pylorus. 1 to 3 may be present at once. They become deeper as they approach the pylorus and are usually deeper on the lesser curvature side.

Marked variation in the rapidity, the depth and the number of the waves occur, depending on the mental state of the individual as well as on pathological conditions. They are increased by hunger, drugs (probably physostigmine), and also are

better seen in the prone position.

A peristaltic wave is characterized by its smoothness, rounded margins, and finger-like indentation.

8. *Antrum.*

That portion of the stomach between the last peristaltic wave and the pylorus is called the antrum. It dilates with each wave reaching it and collapses when the pylorus opens. It may close by a diffuse contraction rather than by a wave of constriction.

9. *Pylorus.*

The constricted portion of the stomach at its distal end varies in size. It is very narrow usually, due to the projection into the lumen of the pyloric muscle. It may appear as a narrow band of density connecting the antrum with the duodenal bulb. It may open with each peristaltic wave reaching it but often does not. Normally it begins to open and pass out the contents of the stomach within a minute or two after the ingestion of the barium meal.

B. *Normal Appearance of the Duodenum*

1. *Anatomical divisions and nomenclature.*

The first portion of bowel beyond the pylorus is called the *duodenal cap* or *bulb*. From there the duodenum turns sharply and descends and this is the second portion. Then it runs transversely for a short distance and then ascends behind the stomach up to a point above the lesser curvature of the stomach where it joins the jejunum at the duodeno-jejunal flexure. The last portion of the duodenum is called its third portion.

According to Forssell the nomenclature is: *corpus duodeni*, *pars descendens*, *pars inferius*, *pars ascendens*, *flexura duodeno-jejunalis*.

2. *The duodenal bulb or cap.*

This is a triangular shaped density, similar in shape to a bishop's "cap." It is homogeneous and

very similar to the stomach in its density. The lesser curvature, greater curvature, anterior and posterior walls correspond to those of the stomach. Its base is toward the pylorus, the apex being higher and ending in a sharp angle with the second portion.

In the hypersthenic individual the bulb is often posterior to the antrum to such an extent that it can only be seen in the lateral position. In the asthenic it is above and to the right of the pylorus. In the lateral position it is seen to be posterior to the pylorus which itself is posterior to the body of the stomach.

In many individuals, the second portion of the duodenum is superimposed upon the bulb in the postero-anterior position. Rotation of the patient to the left will relieve this but the bulb will then be superimposed upon the spine. Rotation to the right will in some cases superimpose it upon the body of the stomach.

The bulb opens and closes with a fair degree of regularity, corresponding to some extent with the peristalsis of the stomach and the opening and closing of the pylorus. It is not always synchronous.

Variations in shape and size are very great. It tends to be larger in asthenic individuals, often being greatly dilated, and smaller and rounder in hypersthenics.

3. *The duodenum—second and third portions.*

The passage from the bulb to the second portion produces a striking change in the character of the shadow, due to the difference in the mucous membrane, the presence of the *plicae duodenalis* or the *valvulae Bauhini*.

The remainder of the duodenum is thus narrower, not at all homogeneous, changing rapidly in appearance, and giving a feathery very irregular shadow.

(To Be Continued)



CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. The clinical data are given to the students in mimeographed form one week before the conference. The students study the clinical record and try to predict the postmortem findings. Many physicians have expressed interest in this type of study and therefore the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. No signs, symptoms, or laboratory tests are given unless they appear on the chart, regardless of how important they may be in the diagnosis. If a clinical finding is entirely in error, it is omitted. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Readers may find it interesting to study the clinical report and arrive at a conclusion before consulting the postmortem report.

Autopsy—31—431.

Female infant, six days old, normal delivery. Birth 11:20 A. M. April 4, 1931. At 12:30 P. M. March 5 the nurse noticed mucus in the baby's throat, which caused cyanosis. This was aspirated with a bulb. The mucus accumulated repeatedly and caused the infant to become cyanotic. This condition was relieved by aspiration of the mucus. The infant could not nurse and was unable to retain water given by medicine dropper.

X-ray of the chest showed nothing abnormal. A lateral plate with a catheter in the esophagus along with a little barium showed that the esophagus ended in a blind pouch at about the level of the bifurcation of the trachea. On the afternoon of March 5 the infant began to have a yellowish purulent discharge from the nose and mouth. She was given normal saline subcutaneously and rectal feedings. The rectal feedings were not retained. On March 9 it was noted that there was gas in the stomach and intestines. This, together with the evidence of infection of the lungs, indicated that there was a communication between the trachea and the distal portion of the esophagus. A gastrostomy was done but the infant died on March 11. The clinical diagnosis was congenital atresia of the esophagus with a communication between the distal portion of the esophagus and the trachea.

Post-mortem report. There is atresia of the esophagus at the level of the bifurcation of the trachea, the lower portion of the esophagus communicating with the trachea. The immediate cause of death was bronchopneumonia.

Autopsy—31—402.

The case is that of a white woman, 58 years of age, who was seen one year ago at which time she complained of cold in the head, tired feeling, and dizzy spells. Her blood pressure was 230 systolic. Red blood cells 4,000,000; white cells 6,000. A diagnosis of hypertension was made.

After Christmas 1930 she felt tired and stayed in the house all the time. Her husband was unable to persuade her to get up and move around. About the middle of February 1931 she complained of sweating

of the feet at night. Her mental activities seemed to be slower; she had to be asked questions two or three times before she responded. Her appetite had been very good up to about March 1, 1931, when she developed shortness of breath, weakness, and edema of both legs. The edema gradually increased. She developed some fever with sore throat, which disappeared in about two days. There were no ulcers in her throat. She was admitted to St. Mary's Hospital March 4, at which time she had moderate edema of the legs, orthopnea, pallor, pulse of 102, temperature 100.8°, and respirations 24. Red blood cells 2,000,000; white cells 1,200; 40 per cent hemoglobin. The urine showed albumin ++; granular casts +++; occasional hyaline casts; specific gravity 1021. On March 5 white cells were 800; lymphocytes 95 per cent; monocytes 5 per cent. March 6 hemoglobin 45 per cent; white count 340; no granulocytes present.

While in hospital the edema of her legs gradually cleared up. She became more stuporous. Her respirations rose to 35 and her temperature to 104.2°. Blood pressure 178/98. Diagnoses made by the consultant of essential hypertension with cardiac decompensation; moderately severe toxic anemia and agranulocytosis.

There was spasticity of the muscles of the neck and left arm and some spasticity of the right arm. There was no pain at any time. Some sore throat while in hospital.

March 6 her condition seemed to be somewhat better. She was transfused with 600 cc. of citrated blood; at 5 P. M. respiration became labored, pulse 140, rales in the lungs, cyanosis of the lips and finger tips. She died 8:10 P. M. March 6.

Post-mortem report. No edema; no jaundice. Marked congestion and edema of the lungs. Heart weighs 390 grams—left ventricular hypertrophy. No cloudy swelling of the organs. Multiple small leiomyomas of the uterus. Marked atherosclerosis of the aorta. The bone marrow is normal on gross examination.

Diagnosis. Agranulocytosis.

Comment. This is a fairly representative example of what is now regarded as agranulocytosis. The typical case shows a sore throat, especially an ulcerative type, with a toxic anemia and almost complete disappearance of the polymorphonuclear leucocytes. It is further characteristic that no explanation for the anemia is found unless the throat be interpreted as its source.

Autopsy—31—408.

The case is that of a white woman, 38 years old, admitted to hospital March 3, 1931. On August 3, 1928, she delivered a full term baby. For several months after labor she was tired, short of breath, and had edema of the ankles and legs. She said that she had never felt entirely well from that time. In October 1928 she said that she was struck on the head by a falling board. The injury did not make her unconscious, did not cause her to stop work, but in December of the same year she noticed a soft swelling at the site of the former injury. In March, 1929, a physician diagnosed a tumor of the skull and gave her x-ray therapy. During the next few months the tumor of the head disappeared but she developed pains in both shoulders and general weakness. There was a defect in the skull at the site of the tumor but this gradually became smaller. In July, 1929, the defect in the skull had completely healed but she became nauseated and vomited frequently and she was still weak.

In January, 1930, she had pains in the joints, in the chest and the legs. The pain was not severe and was intermittent in character. Dizzy spells came on suddenly; these passed away after she sat down awhile. No diplopia. The dizzy spells came 3 or 4 times a week. In June, 1930, she fractured the upper part of her left humerus; this was a spontaneous fracture; she did not fall but threw her arm out to the side, when the fracture occurred. She was treated for six weeks in hospital. The fracture of the humerus healed so that she had perfect use of the arm. She was told she had albumin in the urine at this time. Later the albuminuria disappeared. In August, 1930, the chief complaints were weakness and anorexia. She was told that she had anemia and was treated with liver extract. She could not tolerate the liver extract and had to discontinue it. In December, 1930 she felt much better and thought she was beginning to get well. January 3, 1931, had an attack of influenza; was in bed for four weeks; had pains in the joints, especially the knees and elbows. Pleurisy on the left side caused her a great deal of pain on deep breathing. After this time she gradually grew weaker. Still had anorexia and vomiting.

On admission March 3, 1931, she complained of weakness, loss of 35 lbs. in weight, nausea and vomiting, malaise. She had scarlet fever at 3 years of age. Six children living and well; no miscarriages.

Blood pressure 100/60; temperature 98°; pulse 110. Woman lying quietly in bed, apparently in no great pain; very emaciated and anemic. No mental impairment. Skin dry and warm; wrinkled like that of an old woman; reddened ulcerated area 3 cm. in diameter over the scapula; also decubitus over the buttock. Slight cervical adenopathy. Vascular system negative. Reflexes negative. Muscles weak and flabby. Upper half of the left arm showed a diffuse, soft area, where the arm had been broken. Slight limitation of motion of both elbows; slight pain upon extension; left arm could not be fully abducted. Clavicles enlarged and nodular; right 4th rib anteriorly was also somewhat larger. Over the occipital region in the mid line there was an area about 6 cm. in diameter in which the normal contour of the skull was lost and appeared to be flattened out; loss of convexity in that region and areas that appeared softened. Much dental work in the mouth; fetid odor to breath; tongue coated. Lungs negative. Apex of

heart visible at the 4th interspace and forceful to palpation; heart not enlarged; systolic murmur located in both sides of the sternum. P2 less than A2. Abdomen distended and tympanitic; rigidity present; no masses; liver and spleen not felt.

March 5 urine: 1018; heavy cloud of albumin; repeated urinalysis negative. Blood March 3: hemoglobin 56 per cent; red cells, 2,750,000; white cells 6,150; polymorphonuclears, 70 per cent; lymphocytes 29 per cent; eosinophils 1 per cent; slight anochromasia, poikilocytosis, anisocytosis, and polychromatophilia. Group II.

On admission able to walk with some assistance; very weak; could not retain food; nauseated; vomited 100 cc. of greenish fluid. S. S. enema given and expelled with poor results. March 4 gastric expression with histamin mm v:

		Free HCl	Total
1st specimen	67	5	32
2d specimen	31	0	19
3d specimen	54	0	18
4th specimen	53	5	29

X-ray study of skull, chest, humerus, pelvis, thoracic and lumbar spine. Conclusion: multiple myeloma involving bones of pelvis, skull, chest, and femurs with pathologic fractures in pubis and ribs. Stasis of gas in small bowel.

Hemoglobin 56 per cent; red blood cells 3,380,000; white cells 12,750.

March 5 no nourishment and very little water; abdomen less distended; no abdominal pain. Vomited much dark green material. Enemas and turpentine stupes gave little relief. Peristalsis heard on auscultation. Vaginal and rectal examinations negative. Smear negative. Blood urea nitrogen 50. Spinal fluid, pressure 60/100; negative. Blood Wassermann negative. Emesis several times of small amounts. 100 cc. of 10 per cent glucose given intravenously. Fundi of eyes essentially negative.

March 6, urine: sugar ++++; no albumin. Blood chlorids 550; urea nitrogen 58.8; CO₂ 64. X-ray showed marked stasis of gas in small intestine. Exploratory operation March 7 showed small intestine from ileocecal valve upward markedly thickened. Death rather suddenly 8:45 A. M. March 8.

Post-mortem report. Marked emaciation; no edema or jaundice. 500 cc. of blood-stained fluid in the peritoneal cavity. The large intestine is collapsed but apparently normal. The small intestine is distended and shows marked thickening of its walls throughout the ileum; the walls are tough and fibrous in texture; no mechanical obstruction of the intestinal tract. The wall of the gallbladder is moderately thickened; the bladder contains numerous calculi. The bile ducts are patent and not distended. The upper and lower ribs are softened and fractured. The left ilium is soft, friable, and easily cut with the knife.

Microscopic examination shows multiple myeloma of the bones. The intestine shows extensive amyloid infiltration.

Diagnosis. Multiple myeloma; amyloid infiltration of the small intestine, leading to intestinal obstruction.

Comment. The intestinal obstruction was due to amyloid infiltration of the walls of the ileum. This is an unusual complication of multiple myeloma. There was no albumin in the urine during the patient's stay in hospital.

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MEDIUM-PAY PATIENTS

Another publication of the Julius Rosenwald Fund on the middle-rate plan for hospital patients is just off the press. This one is in the nature of a report giving the first year's experience of the Baker Memorial of the Massachusetts General Hospital, Boston, Massachusetts.

Because it deals with payments to doctors as well as to hospitals it is of interest to all physicians who have patients of moderate means. The majority, of course, belong to this group. We often hear it stated in discussions on the high cost of medical care that only the very rich and the very poor can avail themselves of the best. Why should this middle class of self-respecting individuals who desire to pay for what they get in so far as they can be made to suffer? They are the bulwark of our social structure, standing between the dangers and liabilities of riches and poverty, and certainly deserve better treatment. Indeed, they have a right to the best, and no maudlin sentimentality should delegate this right to the morons of either extreme.

Habits formed in clinics divide patients into pay and non-pay. The social worker has need of no other classification, but it is high time that physicians change this tendency among themselves. They should take greater interest in the economic problems of their patients. Greater kindness and helpfulness should be afforded with the purpose of making fair adjustments to meet the resources of a very worthy middle class. With appropriate delicacy, tactful inquiry may disclose opportunity for more deserving charity in a part-pay patient than any other.

The middle-rate plan of the Baker Memorial reports the median family income of patients treated as \$1,800, and the average fees as \$89.41

for hospital care; \$58.67 for the services of doctors; and \$11.68 for special nurses. These fees were determined, collected as a single bill and distributed by an institution, but we refer to them because of the lesson the individual may find for practical application in general routine work.

Physicians have always given their services freely to the poor, but a little more thought might well be bestowed upon the gradation of fees within that class which constitutes their really, truly best customers.

A. E. H.

THE DEPRESSION AND MORTALITY RATES

Reports that have been published from time to time during the past year show, in every instance, a decrease in the mortality rate as compared with the year preceding the depression. One can only surmise to what this decline may be attributed. The fact that a large number of men and women are forced to lead a less active life and have a greater opportunity for rest may be a factor.

The simple mode of living of a large part of the population may also influence the ratio. Another factor, however, which must not be minimized is the greater concentrated effort in times like these, of the public health agencies and social welfare groups to protect and maintain the health of the community.

In spite of these factors, the skeptics will tell us that the decrease in mortality rates is due to the fact that the people generally cannot afford medical attention.

The only untoward fact in these reports is the great increase in the number of deaths by suicide since the debacle of the stock market crash. That the business depression has played a large part in the increase in the number of suicides is definitely known. Another evidence of changing times is brought to light. No longer is it the fashion to turn on the gas or the water in the bathtub. The fashionable way to commit suicide these days is to jump from buildings and other high places.

T. Z.

THE COUNTRY DOCTOR

All good doctors are not located in large centers of population. Opportunities may be more numerous and seem greater there but they are certainly not confined to such places.

Everyone knows the ease with which responsibility is shifted in a city. It is, as a matter of fact, the customary procedure. We do not criticize the propriety of frequent consultations or reference of patients but we do maintain that individual development often suffers from ease in this direction and retards self confidence. There is a "cock-sureness" about the successful country doctor that everyone must admire, and this is how it comes about. In the first place, he must meet every emergency. When responsibility comes to him, he cannot evade it. He, and he alone, must solve the problem and perform the task before him. Spurred by this necessity, he applies himself diligently and equips himself properly to cope with every situation whenever and wherever it presents itself. Having done so, he proceeds without fear of controversy. He has developed one of the greatest assets that anyone may possess in making for success: confidence in self. When a timid boy finds it necessary to whip a bully and does it alone, through this experience he gains faith in himself that is well-nigh sublime. Such is the opportunity and one of the rewards of him who has chosen geographic isolation.

If we reread Emerson's "Essay on Compensation," we may come to the conclusion that advantages and disadvantages are pretty equally distributed in this life, and each may choose the urban or rural without fear or favor according to his likes; envy is ignorance and imitation is suicide.

A. E. H.

DR. SOREN P. REES

Dr. Soren P. Rees died Friday, October 2nd, at his home following a short illness from cancer of the stomach at the age of 61.

Dr. Rees was born September 27, 1870, at Vejle, Denmark, and was brought to this country in 1881 by his parents, who established their residence in Stillwater, Minn.

He entered the University of Minnesota as a student in 1890 and the medical school proper in 1895 and was graduated with the class of 1897. After one year's internship at St. Barnabas Hospital, he practiced medicine at Anoka, Minn., three years, after which he moved to Minneapolis where he labored in his profession until the time of his death.

During his student days he was assistant registrar at the university and for some years after his graduation was instructor in physical diagnosis at his alma mater. He was physician to

and at one time Chief of Staff of the Swedish Hospital. He was a member and for some years chief of medicine on the Minneapolis General Hospital staff. He was a member of the Hennepin County Medical Society, Minnesota State Medical Society, American Medical Association and Minnesota Academy of Medicine. He was interested in art and a life member of the Minneapolis Institute of Arts, a founder and secretary of the Scandinavian Art Society of America. He was a deacon of Trinity Baptist church.

He was an indefatigable worker, careful about details and had the confidence of his patients to a remarkable degree; few could boast of holding a clientele so continuously. Among his colleagues he was regarded as a clear thinking, fluent and forceful speaker and he was listened to attentively because he always backed his statements with logic and proof.

A. E. H.

SOCIETIES

Yankton District Medical Meeting

The regular fall meeting of the Yankton District Medical Society was held at the State Hospital, Tuesday evening, September 29, 1931, the Society being the guest of Doctor G. S. Adams and his staff.

A fine dinner was served in the banquet hall of the State Hospital. There were about sixty-five or seventy at the tables, which included the Ladies' Auxiliary and visitors.

After the dinner the meeting was called to order in the Amusement Hall by the President, F. A. Moore, M. D.

The scientific program was devoted to the consideration of tuberculosis, the following being the complete program:

"Bovine Tuberculosis in Humans," Dr. D. C. Lochead, Rochester.

"Tuberculosis in Animals and Its Relationship to Humans," Dr. T. W. Munce, Veterinarian of Sioux City, Iowa.

The discussion of the above two papers was opened by Dr. J. C. Ohlmacher of Vermillion, South Dakota.

"As the State Board of Health Sees Tuberculosis in South Dakota," by Dr. A. E. Bostrom of Waubay, S. D.

The program upon the whole was highly instructive and interesting. The doctors present considered this meeting one of the best in the history of our society.

We had as special visitors Drs. W. A. Bates and J. F. D. Cook, President and Secretary respectively of our State Medical Association; also Dr. M. C. Johnston of Aberdeen, Councilor of the First District. Each of these doctors responded with appropriate remarks upon invitation of our President, at the close of the scientific program.

In addition to the regular attendance, we had the Ladies' Auxiliary who attended in a body in response to an invitation of the society.

There were in attendance about eighty-five including the senior medical students of Vermillion, S. D.

J. A. HOFF, M. D., Secretary.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.

Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

What's New in Sanitation

Grand Forks' water supply from the Red Lake River, consisting of an overhead and underwater crossing of the Red River, a new pump station, elevated tank, additional mains and a new treatment plant have been completed at a cost of \$225,000. It is hoped that the frequent outbreaks of dysentery caused by contaminated water entering the suction line through leaks will now be a thing of the past.

Wahpeton has completed work on a new 18-inch cast iron intake line which will supply water from the Ottortail River in Minnesota to the Wahpeton Purification Plant in North Dakota. This line replaces a badly disrupted vitrified intake line in use for the past fifteen years, and is part of a \$30,000 project.

Minot will relieve the present unpleasant conditions at the sewage treatment plant by extending the outfall sewer to a point outside the city limits. An extension of 6,800 feet is to be made to the present 30-inch sewer at a cost of \$50,000. The improvement is to be conducted as an unemployment relief project, and only those who are the heads of destitute families are to be employed. Payment will be made in coupons for payment of groceries and rent. Bids have been let and the work is about to begin.

Valley City has adopted the standard milk ordinance and W. H. Moore, M. D., present City Health Officer has charge of the milk inspection work. One feature is the grading of raw and pasteurized milk, such grading depending upon the compliance or non-compliance with the various items in the ordinance. The new ordinance will require the licensing of all dairymen selling milk in Valley City, tuberculosis tests of all cattle, frequent inspection of dairies by the inspector and regular analyses of milk samples. Valley City is the first city in North Dakota to adopt the standard milk ordinance and its adoption has paved the way for a new era in milk sanitation work.

Drouth Area Health Project

On October 1st there was established, through Federal aid, three full time public health units in the drouth area of North Dakota. One district is composed of Williams, Burke, Divide and Mountrail Counties. Another comprises Renville, Rolette, McHenry and Pierce Counties, while the third district is made up of McKenzie, Dunn, McLean and Morton Counties. One full time medical officer has charge of each district and a nurse is supplied for each county. A nursing supervisor and sanitary engineer are also provided.

These districts and their full time personnel, supplement the local health units and in no manner conflict with their work or authority. The funds to carry out this service are derived largely from Federal appropriation together with small amounts provided by the state and the counties interested.

A generalized public health program modified to fit the needs of the respective counties will be followed. This program will include immunization; prevention of

communicable diseases; sanitation; prenatal, postnatal, preschool and school health education; education in diets and general public health education, and will be carried out under the direction of the State Department of Health.

This is a new experience in public health in North Dakota and the work will be watched with interest. The service is to cover a period of nine months from October 1st.

We have now released fifteen "Weekly Health Thoughts." How do you like them?

Typhoid Investigated at Alexander

The State Health Department recently completed its investigation of the recurrence of Typhoid Fever outbreaks in the vicinity of Alexander, in McKenzie County. For the past fifteen years, at least, cases of Typhoid Fever have occurred in that community regardless of season, and during the present year six cases have been reported. No other sections of McKenzie County have reported this disease for several years.

Sixty convalescents were contacted and stool and urine specimens secured for laboratory examination and arrangements made for repeated tests by those reasonably expected to be carriers. Two convalescents had previously been proven carriers by this method.

A complete sanitary survey was made, and at a Typhoid Immunization Clinic 500 persons were immunized.

Our card index for deaths and marriages is now completed and at your service.

Dr. O. G. Bean, formerly located at Willow City, has moved to Finley, N. D., where he will continue general practice.

Dr. A. P. Nachtwey, Dickinson, N. D., has recently returned from a year's absence in Europe, where he was connected with one of the leading clinics at Bern, Switzerland.

Dr. Sverre Oftedal has returned to Fargo, after an absence of two years in California, and will again resume active practice. Dr. Oftedal was the first graduate in medicine at the University of North Dakota in 1909 and for 15 years was among the leading physicians of Fargo.

The Southwestern District Medical Society held their September meeting at Beach, N. D., with a good list of members being present. Dr. J. V. Neville, Dickinson, was the principal speaker, his subject being "Infant Feeding." The October meeting will be held at Glendive, Mont., on October 22nd, as a joint meeting with the Eastern Montana Society.

NEWS ITEMS

{ We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession. }

Dr. R. G. Scherer, formerly located at Morgan, has moved to Caledonia, Minn., where he will continue in general practice.

Dr. G. E. Whitson, Colman, has moved to Madison, S. D., and opened offices for general practice.

Dr. W. G. Benjamin, Pipestone, Minn., has returned home after spending several months in touring the principal cities of Europe.

Dr. Arthur C. Strachauer, the well known surgeon of Minneapolis, has been appointed Chief Surgeon of the Soo Line Railway.

Dr. H. T. Gustafson, Minneapolis, was married last month to Mrs. Mildred Lindesay, of Blue Earth, Minn.

Dr. J. W. Leighton, who has been in active practice at Scotland, S. D., for several years, is now located at Iowa City, Iowa.

Dr. H. S. Harmon, Mobridge, S. D., has disposed of his practice and is now located at Seattle, Wash.

Dr. L. A. Gates, prominent physician of Bridger, Mont., was recently married to Miss Izola M. Albrecht, of Minneapolis.

Dr. B. T. Bottolfson, Moorhead, Minn., has been notified that he has been awarded a fellowship in the American College of Surgeons.

Kappa Chi Chapter of Phi Chi, National Medical Fraternity, have recently opened their new \$40,000 home at the University of Minnesota.

Dr. E. M. Howg, who has been in practice the past few years at Viborg, S. D., has moved to Lyle, Minn., and will continue his practice.

The new Bethesda Hospital, St. Paul, that is now being constructed at a cost of over \$500,000, will be completed early in 1932 and will have a capacity of 150 beds.

Dr. Wm. Davis, with his daughter, Miss Mary, have returned to their St. Paul residence after spending three months at their summer home at South Orleans, Mass.

Dr. David Gordon, a Minneapolis physician, was recently sentenced to the Leavenworth prison

for a term of 18 years, being a "repeater" in the violations of the narcotic law infractions.

Dr. Donald B. Pritchard, who has been in active practice for many years at Winona, died recently at the age of 66 years. His death followed after a third stroke of paralysis.

The Watertown Medical Society held their first fall meeting this month at Watertown, S. D., with Dr. A. B. Rivers of the Mayo Clinic, being the principal speaker.

Drs. W. N. Graves, W. C. Martin, N. J. Braverman, and M. L. Whalen, all of Duluth, have received commissions in the Medical Reserve Corps for the eighth congressional district.

Members of the Cass County Medical Society held their first meeting of the fall season at Fargo last month, with Drs. P. H. Burton, Fargo, and J. B. James, Page, being the principal speakers.

Dr. Paul H. Fesler, superintendent of the University of Minnesota Hospital, was elected president of the American Hospital Association at the annual meeting recently held at Toronto.

Dr. A. C. Fortney, formerly associated with the Miller Clinic, St. Paul, has joined the staff of the Clay, Hanna & Lancater Clinic at Fargo. Dr. Fortney will specialize in Diabetes.

Dr. E. S. Watson, formerly of Denver, Colo., has been added to the staff, and will be in charge of the department of Obstetrics and Pediatrics at the Aberdeen, S. D., Clinic.

Dr. P. T. Geyerman, Hot Springs, S. D., spent several days last month in New York City, where he attended a meeting of the American Surgical Association.

Delegates from 23 Shrine temples in 10 middle western states recently held their first annual inspection of the Shrine Hospital for Crippled Children in Minneapolis. The visit of temple delegates, which they hope to make an annual event, is for the purpose of keeping Shriners informed on our hospital work, and also to pool ideas for bettering the hospital service.

Dr. C. E. Robbins, Pierre, S. D., has been notified of an award of Fellowship in the American College of Surgeons. Dr. Robbins is an eye, ear, nose and throat specialist associated with the Pierre Clinic at Pierre, S. D.

Dr. Arthur F. Grove, Dell Rapids, S. D., has been awarded a fellowship in the American College of Surgeons, which honor will be conferred at the convocation held in New York City, this month.

The members of the Stearns-Benton Medical Society held their September meeting at Sauk Rapids, Minn., with Drs. H. B. Clark, Fred Stangl, and F. J. Schatz, all of St. Cloud being on the program.

The physicians and surgeons of Winona, are planning a series of lectures the coming winter, by out of town authorities upon medical and surgical subjects. Invitations have been extended to about 200 in Winona and surrounding territory.

The fall meeting of the Red River Valley Medical Society was held at Thief River Falls last week, with Drs. J. A. Myers and W. A. Fansler, Minneapolis, and Dr. E. A. Meyerding, St. Paul, being on the program.

Mr. G. W. Olson, former superintendent of the Swedish Hospital, Minneapolis, was a visitor in the city this month, the first time in about six years. He is now at the head of the Lutheran Hospital at Los Angeles, Calif.

Dr. Edgerton L. Crispin of Los Angeles, was named president of the Association of Resident and former Resident Physicians of the Mayo Clinic and Mayo Foundation at the annual meeting held at Rochester this month.

A large attendance of the members of the Madison Medical Society was held last month at Madison, S. D. After a fine banquet was served, the balance of the evening was spent in discussing proposed legislative measures in which the society is deeply interested.

Dr. Mary B. Atwater, after forty years of active practice at Helena, has retired and will make her future home in California. Mrs. Atwater was extensively feted by her host of friends as she has always been very active in all civic and social work.

Dr. M. L. Serhus, Williston, N. D., has been named medical director for the counties of Burke, Mountrail, Divide and Williams on the new program set up by the State Health Department. He will have charge of medical care of drouth dependents during the coming winter and will carry on immunizations which may be decided upon by the state health department.

Dr. F. E. Harrington, Minneapolis health commissioner, is the new president of the Minnesota Trudeau Medical Society. The organization's purpose is the scientific study of tuberculosis. Dr. Harrington was chosen on his return from a health convention in Montreal, where he had been elected secretary-treasurer of the International Society of Medical Health Officers.

Funeral services for Dr. Andrew S. Stayer, 84 years of age, who was found dead from exhaustion in a marsh near the Fort Snelling reservation, was held at Gettysburg, Pa. Dr. Stayer served during the Spanish-American War and the World War, being in charge of the soldiers' hospital at Milwaukee during the latter. He came to Fort Snelling a year ago with Lieutenant Colonel John R. McKnight, his son-in-law.

Blue Earth County Medical Society had an attendance of over fifty members at their opening fall meeting last month at Mankato. Among the out of town visitors present were the following, all of them being officers of the State Society: Dr. Ludwig Sogge, Windom, president, Dr. E. A. Meyerding, St. Paul, executive secretary, and Drs. C. B. Wright, Minneapolis, and Herman Johnson, Dawson, members of the council.

Minnesota leads all other states in the work of case finding in connection with the fight against tuberculosis. Dr. H. E. Kleinschmidt of the National Tuberculosis Association told nurses and physicians who remained in St. Paul for a case finding conference following the Mississippi Valley Tuberculosis conference session. There are more cases of the disease reported in Minnesota for every tuberculosis death than in any state.

Dr. Cecil Watson, Princeton, Minn., has been awarded a National Research Foundation Scholarship of \$2,500 a year. This is in recognition of the outstanding work which he did in medical research while a student at the University of Minnesota and in Munich and Vienna where he has been studying during the past year. Dr. Watson graduated from the University of Minnesota in 1927. After receiving his degree of Master of Arts at that university he practiced in Minot, N. D., for two years.

New born infants who have difficulty in their breathing will now be given a better chance for life and health at University Hospital, Minneapolis. A new Drinker artificial respirator, infant size, will be installed soon for that purpose as well as for the treatment of infantile paralysis. Occasionally, hospital attaches point out, there is the problem of the infant whose breathing cannot be started by ordinary methods. In such cases the respirator will be put into use to aid the tiny lungs gain the necessary strength.

This warning was recently issued by the public health education committee of the Minnesota State Medical Association. "Lungs are a danger point and should have careful attention," the bulletin stated. "Hard running, hard competitive

play often brings an old tuberculosis infection to new life in adolescence. The time to prevent such tragedies is before the game, not after. We shall have fewer deaths from heart disease when more thorough medical inspection is the rule in every school for those who engage in sports. A student with a weakened heart can do himself irreparable harm at track, basketball or football, and many of them do."

The Sixth District Medical Society had a very interesting and successful meeting at Bismarck on October 8th. There were thirty members and five guests present. After dinner had been served, Dr. C. A. Stewart of Minneapolis presented a paper on "Childhood Tuberculosis." This was followed by a paper by Dr. V. J. LaRose on "A Case Report of Multiple Calculi in the Left Kidney and Bladder in a Four Year Old Boy." A case report of "sarcoma of the ilium in a girl nine years of age" was presented by Dr. N. O. Ramstad and Dr. L. W. Larson, and a review of the basis upon which disabilities are determined by the Workmen's Compensation Bureau was given by Dr. W. H. Bodenstab.

Mrs. Mayme F. White, Minneapolis, 61 years of age, unlicensed, entered a plea of guilty to practicing healing without a Basic Science Certificate. Mrs. White claimed that she was a Spiritualist and had been practicing Magnetic Healing. However, in the present case, roots and herbs and some pills had been prescribed for the patient. The Court imposed a fine of \$100 or ninety days in the workhouse, with the defendant paying the fine. The Court also warned the defendant against violating the Medical Laws in the future, and the Court also instructed the defendant that the practice of healing was regulated by law and required a license and that she undoubtedly would be prosecuted with more serious consequences for a second violation.

John Edmund Doran, 59 years of age, a licensed physician in the State of Minnesota, entered a plea of guilty to practicing medicine as an itinerant physician without a license. For several years Dr. Doran has made a practice of traveling about the State and maintaining an office temporarily in hotels where he received patients after having advertised in the local newspapers his contemplated visit to the community. Among the towns where the doctor maintained an office are Mankato, Winona, St. Cloud, Canby and Albert Lea. Dr. Doran was arrested on a complaint filed by the State Board of Medical Examiners. The defendant waived his hearing and was held to the District Court at Albert Lea

under \$1,000 bail, but, finally decided to plead guilty with the foregoing sentence. Judge Haycraft suspended the sentence upon several conditions, the important one being that he is to absolutely refrain from practicing medicine in this state in more than one town.

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SUBACUTE BACTERIAL ENDOCARDITIS*

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MINNEAPOLIS, MINN.

Because of the frequency of this form of endocardial involvement, the many difficulties experienced in diagnosis, and because of its relation to other forms of heart disease, this disorder has a very profound interest for the physician.

In the evolution of our knowledge, it has gone under many names. A review of these might be interesting but would not be profitable at a time when knowledge of the causative organism allows a name that expresses its etiology.

A few cases of endocardial involvement with a long drawn-out course, properly characterized as subacute or chronic, have yielded cultures of the gonococcus or the influenza bacillus. Since the number is so small statistical analysis has probably not as yet given us the true proportion in which the sum of these rarer infections occur, but the incidence reported varies with the experience of different writers, and is safely placed at not more than ten per cent, and is probably much less. *B. typhosus* has been reported as a very rare cause of an endocarditis of chronic course.

Streptococcus viridans has been isolated by so many workers that it stands out as the great cause of the condition, having been found in about ninety per cent of the positive cultures reported.

Clawson and Bell¹ state that if the blood for culture is taken when the temperature is high the organism can be cultivated in more than 50 per cent of the cases. In the series of cases they report they found a hemolytic type of streptococcus in five of their thirty-two cases of positive

culture taken from the blood before death in eighteen and at necropsy in fourteen.

It is interesting to compare this with their results of positive culture in acute rheumatic fever in which streptococcus viridans was found in twenty-four cases and the hemolytic type in two.

These writers state that on the basis of morphology, cultural characteristics, agglutination tests and ability to produce experimental endocarditis, there is a suggestion that streptococci are responsible not only for subacute bacterial endocarditis but for acute rheumatic endocarditis; and further, that histologic studies of the valve leaflets indicated also that the two forms of endocarditis differ only in the intensity of the inflammatory reaction.

It would be proper to designate the group as subacute streptococcal endocarditis, indicating in each individual case whether the organism was of the viridans or the hemolytic type and remembering that the former greatly predominates.

A major contribution to the study of the causative organisms in subacute bacterial endocarditis was made by Clawson when he showed the necessity for careful preparation and standardization of the medium for cultivation and when, also, he showed the necessity for protracted study of the medium after inoculation with blood taken from the veins for culture. When he showed that one and even two weeks may elapse before a clearly demonstrable growth of streptococcus viridans will occur, he increased greatly the number of cases in which positive cultures could be obtained. The delicacy and attenuation of growth of the

*Address before the Linn County Medical Society, Cedar Rapids, Iowa, September 10, 1931.

organism had not been appreciated prior to his work.

Because of the relationship in the great majority of cases to old rheumatic heart disease, the factor of previous rheumatic involvement has a considerable interest for us at this time and may profitably be considered briefly. Paul D. White puts old rheumatic valvular disease as the chief predisposing factor in about eighty per cent of the cases.

Swift² has recently summarized the newer knowledge and attitude concerning rheumatic fever. Swift discusses a striking evolution of our ideas on rheumatic fever in the past three decades, shown by the progressive changes in nomenclature from acute articular rheumatism to acute rheumatic fever and latterly to rheumatic fever.

Coburn³ shows a still more significant tendency when he speaks of the "rheumatic state" and reserves the term "rheumatic fever" only for the cases in which the course is typical and the condition diagnostically such.

Swift states that the histopathologic changes are represented most typically by the Aschoff nodule with its central area of broken collagen fibres, surrounded by large cells, probably derived from the locally stimulated connective tissue. He states that the typical subcutaneous nodule shows qualitatively similar tissue injury and cellular response, but with a different quantitative distribution of the component parts.

The most significant fact, however, which should be studied in detail in Swift's article, is that similar lesions, undoubtedly of the same origin but with a somewhat different microscopic picture, occur in the periarticular tendons and ligaments and are found in the pleura and pericardium. In all of these tissues exudative changes may be marked.

Many portions of the vascular system show focal lesions. These may be seen along branches of the vasa vasorum, in the aorta, and in small arteries elsewhere with focal destruction of connective or elastic tissue.

Similar lesions are found in the peritonsillar tissue, in the naso-pharynx, in the intestine, in the kidneys, in the lung and, to be included with the intestinal lesions, in the appendix.

From this evidence is derived the concept that rheumatic fever, and indeed the rheumatic state, affects not one set of organs such as the heart, or the joints, but appears to be a disease involving the connective tissues and the blood vessels. Where there is active motion with stress and strain the tissues appear to be most vulnerable. The many statistical studies showing that tonsillectomy after an attack of rheumatic fever appears to play no part in the reduction of re-

currences seems to give weight to the impression that there must be residual or other foci elsewhere in the body. The possibility that these foci are in the neighborhood of the tonsillar fossae is voiced by S. Gräff⁴. In the belief that the pathological condition of the blood vessels supplying the many typical rheumatic lesions found in the peritonsillar capsule near the point of attachment of the pharyngeal muscles favors distribution of the causative agent to other parts of the body, he applies the term, "primary complex" to these lesions.

Coburn reminds us that as long ago as 1889 Cheadle⁵ emphasized the importance of "a far wider conception" of rheumatic disease. We have long followed him in looking upon fever, endocarditis, pleurisy, tonsillitis, exudative erythema, chorea, subcutaneous nodules and a fleeting exudative arthritis as members of the rheumatic series. Since Cheadle's time the concept of endocarditis has been broadened to that of carditis; i. e. invasion of the vascular and supporting structures of the heart, with gross involvement of one or more of the main anatomical divisions; endocardium, myocardium and pericardium.

Coburn states as his opinion that it has not yet been possible to differentiate the tonsillitis of the rheumatic subject from that of other patients. With the two exceptions just cited the phases named by Cheadle are still generally held to be truly rheumatic. Coburn adds four more which he believes worthy to be ranked as prominent features with the preceding cardinal manifestations, naming epistaxis, hematuria, "growing pains" and migrating pulmonary hemorrhagic solidifications.

Swift observes that with so many organs or tissues simultaneously involved, there is every reason to suppose that they may be also individually and successively involved, and that pediatricians have long appreciated the tendency in children to show first one and then another of the "rheumatic series." Under these circumstances it may require a lapse of years before enough members of the series are seen in combination to make a diagnosis certain. Since there is no specific or diagnostic laboratory test available antemortem, only a convincing combination of the clinical phenomena is available for a diagnosis.

If, as we believe, all this is true, it is not surprising that there is a considerable number of individuals truly rheumatic in whom a definite or specific diagnosis of this condition cannot be made.

To those inclined to believe with Clawson and Bell that rheumatic and subacute bacterial endocarditis differ only in the virulence of the invading organisms, or more especially the susceptibility of the host, this concept is important. It offers a probable explanation for a number of

cases of subacute infection in which a history of rheumatic fever could not be obtained, but in which on autopsy, evidences of a pre-existing rheumatic carditis were found. It serves to add emphasis to, rather than to detract from, the significance of the statement made by Paul D. White⁶ that in about 80 per cent of the cases the chief predisposing factor is old rheumatic valvular disease.

A comparatively small number of cases develop on the basis of congenital cardiovascular defect. Lewis and Grant⁷ have emphasized the part played in this respect by congenitally bicuspid aortic valves. They conclude that among males reaching adult life, and possessing this anomaly, 23 per cent at least die of active endocarditis. They infer that the role played by the bicuspid valve is that it forms a suitable trap for organisms which apparently frequently enter the blood stream.

These bicuspid valves play an important part in the development of endocarditis primary in the aortic cusps, and without a history of rheumatic fever or previous valvulitis, since they are frequently competent and are unrecognizable clinically.

Valve damage by syphilis may predispose to subacute streptococcal endocarditis, but this is rare.

The part played by focal infection is difficult to estimate, though it appears to be a very definite one in many instances. However, the fact that so many cases develop without evidences of focal infection being found after the most careful search, leads one to suspect that cases with chronic focal infection play numerically a minor rather than a major role in the incidence of the disease.

Because of their clinical significance certain characteristics of the pathological conditions should be emphasized. The process tends to involve the valve leaflets, the chordae tendinae, the mural endothelium of the auricles, particularly in the region of the valve, and of the ventricles, particularly the septum. The vegetations can be soft and villous and not firm as in rheumatic endocarditis. They break off readily, form emboli, and, because of the soft granular nature of the deposited material, minute emboli are much more common in this condition than in any other form of endocardial involvement.

Destructive lesions causing penetration, sometimes deeply beneath the endocardium into the valve and into the substance of the chordae tendinae, often causing rupture of the latter, all tend to interfere seriously with the function of the structures mentioned. Penetration of the inter-ventricular septum is likely to cause disturb-

ances of auriculoventricular conduction. All degrees are observed up to and including complete dissociation of auricles and ventricles. There appears to be a distinct tendency to healing but Bell emphasizes that this is only in the sense that the bacteria disappear and the inflammatory reactions subside. He states that organization does not occur and that calcification may take place before or after healing. The right side of the heart is seldom involved in this condition. It is more frequently infected in acute endocardial invasion.

To detail all of the symptoms and signs would be tiresome and profitless and only those of particular significance or interest will be discussed. The characteristic signs to which attention is usually called are fever, petechial hemorrhages in the skin and mucous membranes, an enlarged palpable spleen, evidences of valvulitis, and particularly evidences of changing conditions in one or more valves, together with more or less secondary anemia giving a peculiar pallor. Evidences of embolism, quite often minute, may be late in occurrence and vary from time to time. In the presence of one or more of the evidences of endocardial involvement, the cultivation of streptococcus viridans from the blood has a crucial significance. Lacking these evidences, we may be dealing with a septicemia without endocarditis.

Petechial hemorrhages are evanescent and should, therefore, be sought for daily. The palpebral conjunctiva is a readily accessible and favorite site for their appearance. The retina is not so readily accessible but minute hemorrhages, undoubtedly petechial in origin, when diligently searched for here have been found even when absent from other sites. It is probable that hemorrhages, essentially petechial in type, occur in the kidneys and are responsible for a considerable proportion of the red blood cells so persistently present in the urine. A favorite site for petechial hemorrhage in the skin is over the ventral surface of the chest and its successive appearance here in crops with, in some cases, minimal appearance or absence elsewhere. They sometimes occur more abundantly over areas of pressure such as over the shoulder blades, the buttocks and the region of the greater trochanters in bed patients. The petechial hemorrhages under the nails will be more specifically referred to under the digital manifestations of the disease.

That the petechiae are due to a hemorrhagic tendency, the result of some form of damage to the vessel walls, is shown by the fact that they can be produced at will in most patients in whom petechiae occur. The favorite method of making this demonstration is to apply the ordinary blood pressure cuff to the upper arm; introduce enough air into the cuff so that the manometer is held at

about the level of the diastolic arterial pressure for five minutes and then release the pressure in the cuff. This procedure interrupts venous outflow while at the same time permitting arterial inflow below the cuff with stasis and distension of all the vessels in the region. This is manifested by a cyanotic flush of the skin below the cuff. The petechiae usually appear during the period of compression by the cuff but may be delayed until after its removal and then appear in a considerable crop.

Because of their great value in diagnosis both in clear-cut and in doubtful cases the phenomena occurring about the fingers and toes are of unusual interest. Blumer⁸ has described the digital manifestations in four groups; i. e., splinter hemorrhages beneath the nails, Osler nodes, tender digits and clubbing of the fingers.

The severity and frequency of these manifestations varies widely in different patients and the first three tend to occur in crops or showers. The size of the vessels and the more direct route through the arteries to the digits no doubt plays a part in the arrival of minute emboli here and in the development of lesions where they lodge. The splinter hemorrhages appear in linear form four to five millimeters long, parallel to the long axis of the finger, and terminate several millimeters from the growing nail edge. Observation of this latter fact may be necessary to distinguish the hemorrhage from that due to the introduction of a small splinter. The patients sometimes complain of soreness here, and may attempt to explain it as accidental. Of the phenomena mentioned, these splinter hemorrhages alone may on occasion be petechial rather than embolic. The other three phenomena are, however, undoubtedly due to embolism.

The description of the ephemeral Osler nodes has become classical and does not need repetition. It is important to remember that the pale-centered nodes occasionally leave a small scab to be picked off as it heals, and that any of the nodes may leave a brown stain, sometimes quite deep in tone. Because of the frequency of brown stains in the skin they are significant only when an observant patient or physician notes their new development. Blumer records the development of Osler nodes in about forty per cent of the cases, and I have observed them in a little less than half of the cases seen in the University Hospital and in private practice. The lesion can and does occur with embolism in the more acute forms of endocarditis, but emboli of the size and character necessary for their formation occur almost exclusively in the form under discussion.

Tender digits develop when emboli lodge in the deeper vessels rather than in and just beneath

the skin. There may be no visible swelling or redness, but tenderness develops without apparent cause and may persist for several days.

Clubbing of the fingers in varying degrees occurs in a considerable number of cases but not with the frequency of the Osler nodes. I have seen it in a little less than a third of my cases, Blumer records it in eighteen out of a series of forty-eight. Cotton⁹ found it in about forty per cent. Clubbing is most likely to occur when the case shows enlargement of the heart or splenomegaly, but may occur in the absence of either or both.

Enlargement of the spleen is common but its absence cannot weigh against the diagnosis since a restricting factor such as a previous perisplinitis often prevents enlargement becoming manifest. With the larger infarcts which reach the splenic capsule there may be sudden pain in the region with tenderness persisting for several days. I have heard a friction rub over an enlarged spleen in this condition, no doubt due to the infarct seen later at autopsy. The difficulties in the diagnosis of splenic conditions are such that systematic auscultation over the spleen area is worth while when pain thus develops, even though seldom rewarded by positive findings.

Besides the spleen, the results of infarction are most striking in the brain, the kidneys, the peripheral vessels and in the heart itself. Hemiplegia or paralysis of less extent is well known. Lesions due to minute dusting of the brain with emboli comparable in size to those producing the Osler nodes or glomerular damage are not recognizable clinically, but must occur and are probably responsible in some part for obscure cerebral manifestations.

Embolism manifests itself in the kidney in ways extremely important for the recognition of the disease. In many patients erythrocytes are a constant finding in the sediment from the urine. In a lesser number they occur at irregular periods in showers, but even here, as a rule, a careful search will reveal a very few in the intervals. Hematuria severe enough to give visible color changes in the urine is infrequent but occurs especially with gross infarction of the kidney, and this may be signalled by pain or discomfort of abrupt onset in the kidney region. The progressive destruction by embolism of renal units is the cause of death by uremia in certain individuals who seem to be surviving the infective process itself. Some of the glomerular lesions are indistinguishable from those of chronic glomerulonephritis, but for the most part changes due to embolism, often with the presence of many streptococci in the glomerular loops, are found.

Embolism of a peripheral vessel manifests it-

self in ways depending on the condition of the vascular system and on the size and distribution of vessels involved. The phenomena in the digits have already been mentioned.

Arteriosclerosis tends to limit the development of collateral circulation and thus to determine gangrene when it might otherwise be avoided. The absence of pulsation in the normal site of some arteries is not alone a sign of their blockage, since certain ones not infrequently have an anomalous distribution. These are most often the radial, ulnar and dorsalis pedis. If, however, one has a written record made at the first examination of any individual of the presence or absence of pulsation in each of these, subsequent disappearance of the pulsation, together with pain or soreness and even slight local color changes establishes the diagnosis. I have been rewarded repeatedly for having these records.

Embolism in the wall of the heart occasionally occurs. When the infarction causes an exudate on the pericardial surface in a region accessible to auscultation; i. e., the ventral surface of the ventricles, a friction rub may be heard. This, however, may be for only a few hours or days and detectable only by frequent observations. The pericarditis in this condition is usually fibrinous and limited to the surface of the infarcted region. It is not commonly exudative with a demonstrable or large effusion into the sac, such as is seen in rheumatic fever. Electrocardiographic changes may be seen if the infarct is large enough or suitably situated.

The orifices of the coronary arteries have on occasion been occluded by vegetations on the aortic leaflets or in the sinuses. Embolic lesions are accessible to examination when they occur in the vessels of the eye. I have seen the characteristic picture of embolism of the central artery, and more frequently minute areas of hemorrhage with a white center in the retina. Neither of these lesions is commonly reported, but on occasion may be the crucial point in a diagnosis. Like petechiae, erythrocytes in the urine, peripheral embolism or splenic and myocardial infarction, their discovery requires frequent routine examination with them in mind.

Doherty and Trubek¹⁰ have recently reported them with a histologic study. They note that the appearance of the lesion *per se* is not pathognomonic for subacute endocarditis, since it was demonstrated in an acute endocarditis and in a case of pernicious anemia. Suggestive of the caution necessary in interpretation was the case they cited which was proved by autopsy to be free from endocardial sources of embolism, but in which transfusion was accompanied by a severe constitutional reaction. It was assumed that, be-

cause of faulty blood matching, agglutination of blood cells had taken place and was responsible for the embolic phenomena. These spots in the retina need not produce visual changes, but embolism of the central artery causes the characteristic scotoma. One of my patients discovered it only when the good eye became accidentally covered, and it was the first characteristic lesion found.

In the examination of the heart much care and judgment is necessary. Study often leads to evidences of previous valve defect with the accompanying dilatation and hypertrophy of the heart chambers involved. There may have been a previous pericarditis and mediastinitis with synechia cordis. Remembering the relation to preceding rheumatic involvement, when in the presence of phenomena indicative of an active endocardial inflammation, these evidences of residual changes give added significance. Likewise the rarer congenital defects and, still more rarely, syphilitic valvular disease.

Anomalies of the aortic valve leaflets commonly give no sign of their presence and appear to contribute to the frequency of subacute bacterial endocarditis only by furnishing a favorable site for lodgement of organisms in or upon these valves which were not previously the site of inflammation.

In the early stages of a considerable number of the cases, and even throughout the course in some, there may be either no auscultatory signs of valve involvement, or the signs first found may show no progressive changes. These cases will sometimes afford considerable difficulty in diagnosis, but no such difficulty should be experienced in those more common cases in which progress in the lesion is manifested by changes in the auscultatory signs. Diligence and persistence in auscultation is called for here and it is particularly valuable to have accurate records made of the signs found. In some cases the progress may be very slow, and without careful records one is scarcely aware of the change. In others, changes occur abruptly and are striking. To detail all the changes found would be fruitless but to stress the importance of their early, repeated, and proper recording is to lay the foundation for recognition in many instances. Like embolism, these changes may be crucial for diagnosis in certain cases, though lacking in others.

In view of the frequency with which inflammatory and destructive processes invade the heart wall interferences with the production and conduction of the impulses of the heart beat might well be expected. The heart rate is commonly accelerated, but as a rule in proportion to the anemia and to the fever.

Premature beats appear to be no more common than in the same age group. In fact, with the increase in pulse rate, the frequency of their appearance seems diminished rather than increased. All grades of delay of conduction of impulses from auricle to ventricle are found and are significant since they occur particularly when ulcerative processes in the intraventricular septum involve the conducting system. Frequent electrocardiographic tracings, particularly in doubtful cases, may give evidence of the progressive nature of the lesion. Partial block will give its characteristic irregularity, and complete dissociation its typical bradycardia with rates of 36 to 30 or lower. This type of involvement, however, is not common.

Libman has emphasized the rarity of auricular fibrillation in this condition and experience confirms his observation. To state, however, that the presence of auricular fibrillation makes subacute endocarditis improbable is an error. It is my experience that auricular fibrillation does not develop in the presence of the active process as a rule, but that the active and progressive infective process can develop in individuals with auricular fibrillation already present. In that not uncommon type of patient with rheumatic heart, and especially with mitral stenosis with auricular fibrillation and its consequent irregularity already established, subacute bacterial endocarditis appears to be as prone to occur as it does in the group without fibrillation.

The anemia is usually of the secondary type, but often hemoglobin and red cells are reduced proportionally. The anemia may be an outstanding feature early and occur before the specific signs of endocardial involvement. Its presence should stimulate one to an accurate determination of its cause, if possible, particularly in individuals with previous rheumatic involvement.

While a leucocytosis of twelve to fifteen thousand total count is common, the leucocytes may be present in normal numbers and percentages, and a moderate leukopenia is not uncommon.

The large endothelial phagocytic cells, sometimes called macrophages, may be found in a few cases. To look for them the best technique is to use the lobe of the ear, rub and massage it rather vigorously until a good flush appears, then make a puncture that will give a fairly free flow of blood. It may be that this procedure opens the small vessels so the macrophages can escape or it may be that these cells are more or less adherent to the walls and are thus released. When found they are suggestive but not pathognomonic.

The eventually high mortality in this condition led at first to the idea that the prognosis was hopeless. With more or less complete recovery observed from time to time, less certainty as to the

outlook has been manifested in the literature. These few partial and complete recoveries have undoubtedly led to false impressions as to the efficacy of therapeutic procedures. By this is meant specific vaccination, antitoxin treatment and the administration of drugs by any avenue, oral, subcutaneous or intravenous.

The largest series of cases reported is that of Libman¹¹ whose discussion, based on over eight hundred cases, observed over a period of twenty-five years, is worth reviewing since experience with a very considerable number of cases has shown this grouping to be helpful. He divides them into five groups, A, B, C, D, and E.

Group A includes cases of unusual type, and among them are ten cases of complete recovery. Death is commonly by exhaustion. The myocardial lesion often present is usually of the type due to fever, anemia and general weakness. If mitral stenosis is present death may occur abruptly, preceded or not by hemoptysis from pulmonary infarction or by a sharp attack of pulmonary edema. Embolism of a cerebral artery is quite frequent and there may be embolism in other peripheral vessels, with or without gangrene. Embolism of the coronary artery is rare. Other important causes of death are meningitis, and intracranial hemorrhage, possibly from rupture of embolic aneurysm. Uremia may occur but is more common in the bacteria free stage next outlined.

Group B consists of cases in the bacteria-free stage. The lesions are healed or healing with fibrosis and often with calcifications. Libman states that healing is going on in the depths of the vegetations even in the most active cases. Even when the lesions have undergone fibrosis or calcification, pieces may break off and plug vessels. While these cases are essentially afebrile so far as the endocarditis is concerned, there may be fever with marked anemia, or from large infarction, or from some complication. A valvular defect is commonly found and in addition, a peculiar dark pigmentation of the face, renal insufficiency due to subacute or chronic glomerular nephritis, marked anemia, splenomegaly, embolism, and myocardial insufficiency, the latter much more common and more marked than in the cases in the active bacterial stage. There is often tenderness at the lower end of the sternum. Petechiae and Osler nodes are less frequent and in smaller numbers than in cases in the active stage.

The causes of death in this group in the order of frequency, giving the determining factor, were myocardial insufficiency, renal insufficiency, cerebral embolism, pneumonia, anemia and hepatic insufficiency, mainly secondary to myocardial in-

sufficiency. Sacks and Libman found uremia due to subacute or chronic glomerular nephritis in a third of the cases. Patients in the bacteria-free stage may develop a recurrence and the outcome may or may not be favorable. The so-called bacteria-free stage may last as long as two and one-half years and sometimes longer.

Group C, transitional cases, belong essentially to Group A or B but come under observation and are recognized in different ways. A positive blood culture may soon be followed by negative cultures. Symptoms of the active stage may be present, but the blood culture may be found repeatedly negative and the symptoms of the active stage may disappear, or there may be the clinical features of the bacteria-free stage, but the abundance of petechiae and the general appearance make it probable that the patient was very recently in the active stage.

Group D, mild cases. The rectal temperature is usually not high; they are often up and about, embolic features are not likely, and if anemia is present, it may or may not be marked. In the recognition of this group, Libman emphasizes particularly splenic involvement, the development of clubbing of the fingers under observation, tenderness over the lower end of the sternum, Osler nodes, meningismus and the presence of macrophages in the blood. Mild cases are particularly prone to occur in patients with old valvular lesions.

Group E, recurrent cases. In this group more than one recurrence may occur. These may arise from focal infection, old lesions of previous attacks, and possibly also from infective material in the spleen and bone marrow. The crucial evidence for former attacks lies in the presence of healed lesions abundantly found in the hearts of patients dying with the disease.

TREATMENT

When considering treatment one is inclined to suggest rather than to detail. No specific treatment has so far availed. The finding of agglutinins in high titer in the blood suggests that specific antibody formation is already accomplished in the body and is probably at its maximum effectiveness. Vaccines were among the earliest specific remedies tried out. They failed. The few attempts at antitoxic sera were ineffective. Non specific protein shock therapy would be too dangerous because of its reactions. Intravenous therapy with mercurochrome or gentian violet does not justify itself. Drugs by mouth we know to be inadequate. Capps' experience with sodium cacodylate was undoubtedly misleading, though it did give a momentary flash of hope to some.

All this was to be expected, for the invaders

have passed the last tissue barriers and are thriving in masses inaccessible to cells or fluids of the defense mechanism. The demonstration of some signs of healing keeps hope alive, but even here Clawson and Bell maintain that true organization does not occur.

Symptomatic treatment does not need elaboration. I have only a few points to make. The first is that we usually choose a middle ground when deciding on the degree of rest to be maintained. The absolute and unyielding requirements of a case of recent rheumatic carditis, with a badly damaged myocardium need not usually be applied, though the error of overdoing rest is unquestionably better than its opposite.

The occurrence of embolism in an accessible artery calls for prompt judgment and possibly for action. The smaller the vessel and the finer the dusting of an embolus, the greater are the chances for collateral circulation and the less the local circulatory damage. Seen within the first few hours, four to six for example, I see no reason against attempts to break up and dust into smaller branches, an embolus below the knee or elbow. I have done this, using care, on rare occasion and I think with definite lessening of damage. If an embolus blocks a large vessel, the question as to embolectomy amputation or watchful waiting may arise. The first receives consideration only with a surgeon sure of his technique in this procedure and instantly available. I have had it succeed when I felt certain that the other procedures would fail. There is much less shock in this operation than in amputation, and a guardian angel may prevent other emboli for some time. I paint no illusions to the family.

In view of the known prognosis in this disease, it is wise to keep the details from the patient. If possible, a legally responsible member of the family only should share your knowledge, thus helping to maintain in the environment the needed optimism.

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ENDOCARDITIS*

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When the program committee take it upon themselves to invite a pathologist to come and address what is essentially a meeting of practitioners, they, I think, are running a serious risk; especially if they ask a morbid anatomist they are very liable to have a dull and technical afternoon in front of them. In order to minimize that risk as much as possible, I have chosen the subject of heart disease, which I think ought to be of some interest to everyone here. The actual title is "Endocarditis." We shall not be confined particularly to that title.

Of course, I am a pathologist, so I am prejudiced, but I feel that the practitioner with a pathological background has this advantage over the other man; he has a type of X-ray vision which ought to enable him, and does enable him, to look under the surface into the patient; to picture the actual process of disease as it is going on. We have a very good example in heart disease, and I think such a man must be able to practice medicine much more satisfactorily than a man without this pathological background.

I may say that I am going to speak only of two main diseases of the heart this afternoon. We can say, of course, that there are three great varieties of endocarditis; first, rheumatic, second, bacterial; third, what we may call the acute variety, ulcerative, malignant, or other names applying to this form. The last I want to leave untouched. We shall speak only of rheumatic disease of the heart and of sub-acute bacterial endocarditis.

Our conceptions of acute rheumatic fever have undergone great changes with the passage of years. If you go far enough back, you find that we looked upon rheumatic fever as essentially an arthritis. In adults that, of course, is the feature which at once arrests the attention both of the patient and of the physician. The modern view of rheumatic fever is that it is a disease of the connective tissues of the body, of the connective tissues of the joints, it is true, but, much more important, the connective tissues of the heart and also of other positions, such as the subcutaneous

tissue, and, no doubt, other connective tissues, for instance, the connective tissues of the serous membranes. To mention one example; we know that the pericardium is a frequent sufferer from the rheumatic virus, whatever that may be.

Then we have to ask ourselves the question: What about the pleura? Is there such a condition as rheumatic pleurisy? Only the other day there was a paper in the Journal of the American Medical Association on rheumatic peritonitis. Do these entities really exist?

That raises the question: How do you know that a lesion is rheumatic in character? Suppose we take an analogy from tuberculosis. You know perfectly well that the pathologist can tell if any lesion in any part of the body is tuberculous by one criterion. He finds the characteristic histological picture of the tubercle, it may be in the testicle, it may be in the joints, anywhere; if he finds the tubercle he regards the condition as tuberculous in nature.

In the case of the heart we have the earliest lesions that are recognized, the endocardial lesions, which are very characteristic. They take the form of beadlike vegetations.

These vegetations do not run around the free-margin, but the margin of contact, that is, the line along which the cusps touch one another. That is true both of the mitral and the aortic cusps.

These wart-like vegetations are characteristic lesions of rheumatic endocarditis; they attract the attention of the superficial observer, but they are certainly not the essence of the disease. Through the passage of time these will disappear completely. They become organized, and the patient dies some time later. You examine his heart, and you will not see any sign of these vegetations. These vegetations are not the cause of the symptoms from which the patient suffers, though they are readily recognized in the acute stage if the patient dies in that stage.

These vegetations are small, firm, and they are firmly attached to the cusps, that is to say, they are not readily detached. The consequence is that embolism is not a characteristic of rheumatic disease of the heart. Generally if there is embolism

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the emboli do not arise from the vegetations of the heart; they arise from clots forming in the auricular appendix.

I have said that the essential lesion of rheumatic disease of the heart is not the vegetation. The essential lesion is an inflammatory lesion of the fibrous tissues of the heart. It involves all three of the great constituents, the myocardium, the valves, and the pericardium, but it is most readily studied in the myocardium. This lesion is a focal interstitial inflammation, quite analogous to the miliary tubercle. In typical form it is sharply defined, oval in shape, and it goes by the name of the Aschoff body, because it was particularly, although not first, described by Professor Aschoff.

Speaking generally, in rheumatic myocardial disease, disease of the left ventricle is apt to give rise to acute myocardial failure, disease of the left auricle to chronic myocardial failure.

If we magnify one of the nodules found in the heart, we shall find that it is composed of a number of cells, the details of which I shall not trouble you with, but the most characteristic cell is a large giant cell called the Aschoff type of cell, which is multinuclear.

The point I am making is that here we have the characteristic histological feature which can be used for a method of diagnosis. If a patient dies of some obscure myocardial disease, we can cut sections of his heart and determine from a pathological standpoint if that really is a rheumatic lesion.

Suppose we go to the joints. We can examine the peri-articular tissues, in which we can find the reaction especially well marked, and say whether it is a rheumatic lesion. We can go on, of course, to still other tissues, such as the pleura, or maybe the lung, and that is the method by which we try to determine if the lesions, described by the clinician as rheumatic, really deserve that term.

The lesions that we are describing still are lesions of the myocardium, because it is the myocardium which above all suffers in rheumatic heart disease. The myocardial lesions, and also to a lesser extent the valvular lesions are infinitely more important than the joint lesions. It has well been said that rheumatism is a disease which merely licks the joints but which bites the heart. It is the effect of these bites that we are considering now.

You may have seen a much more diffuse inflammation, one which would be much more damaging to the myocardium. Not only do we get these lesions in the wall of the left ventricle,

where they are most easily seen, but quite often we get them in the wall of the auricle, and when these heal they leave a very severely damaged or at any rate a partially damaged myocardium. As the acute inflammation passes away we get scars left until we have a condition in which the cells are much fewer in number.

Let us leave, now, the myocardium and speak for a moment of the lesions of the valves. I have rather belittled the importance of the vegetations of the valves. We should regard rheumatic disease of the heart as a carditis, or, if we like, a pancarditis; that is to say, the whole heart is most likely to be involved, the myocardium, the valves, the pericardium.

In the valve itself we have not merely a lesion on the surface of the valve; we have a true valvulitis, an inflammation of the entire valve, the whole thickness of the valve. If we cut sections of the valve we can see these same inflammatory cells, but they don't form Aschoff bodies. What actually seems to happen is this. The valve becomes inflamed, and then at the point of the contact of the cusps where they are beating together at 70 or 80 times a minute, at that point of contact of the inflamed cusps, the endothelium is shed off. That is natural. We then have a raw surface. Deposited on this raw surface we at once have fibrin and blood platelets, and there we have a vegetation formed. So you see the essence of the disease, even the essence of the valvulitis, is certainly not the vegetations. Vegetations don't give rise to emboli; they are merely an interesting thing for the morbid anatomist to look at; they don't really fundamentally concern the clinician.

I have spoken about the healing. We all know that inflammation which heals is accompanied by scarring, whatever the disease may be, and that is true also of the valves of the heart. You also know that when you have two inflamed membranes touching one another, they are apt to become adherent together. So the great after-effect in the valves is adhesions, and in the case of the mitral valve we have the two cusps adhering together by their margins so that the valve will not open properly, a condition of mitral stenosis. That is also true of the aortic valve.

Another effect of this healing is sclerosis of the valve. The valve becomes thickened and there is shrinkage, so there is a narrowed opening.

A last word as to etiology, bacteriology. I have said nothing about that so far. I leave it to the last because I propose to start the next disease with a consideration of the bacteriology, and the

contrast between these two is very striking. If you take a case of acute rheumatic disease which dies during the acute attack and examine these vegetations, the chances are extremely in favor of your finding no bacteria at all. There is a lot of difference of opinion, as you know, about the cause of rheumatic fever, but the usual bacteriological investigations give, very frequently, negative results, though sometimes you will find streptococci in the acute lesions in the valves.

It appears to me that the most probable cause of rheumatic fever is a streptococcus of the viridans type, the non-hemolytic type. We haven't asked ourselves yet why we don't find it in the local lesions. Nobody knows for certain. The most probable explanation depends upon the question of hypersensitiveness or allergy. When an animal or a patient is allergic to an organism, the animal or the patient reacts violently to a minute dose of the bacterial poisoning, and it is suggested that a patient becomes sensitized to the streptococcus owing to the presence of a focus of infection, most commonly in the mouth. In such a sensitized patient, if only a minute dose of the bacterial poison reaches the heart valves, it will cause an acute reaction there. That idea is probably applicable to arthritis and other diseases which are inflammatory and in which we cannot demonstrate organisms.

The other great disease is subacute bacterial endocarditis, and here the problem is entirely different. You find the causal organisms with the greatest readiness. All you have to do is to make a smear from the vegetations, and you get a picture of streptococci running in chains. The streptococcus is practically always a non-hemolytic streptococcus of the so-called viridans type. I say so-called because it does not always produce a clear-cut picture of that. In subacute bacterial endocarditis our interest is focused entirely upon the vegetations. Again you see a great contrast to rheumatic disease of the heart. I draw your attention to the interesting fact that the bacteria are found on the surface of the vegetation.

Here is, to me, another extremely interesting point. We all believe in immunity. We give patients vaccines in order that they may produce antibodies against the bacteria, and yet here is a disease which proceeds inexorably to a fatal conclusion, I won't say in every case, but usually by the time you have diagnosed a patient suffering from subacute bacterial endocarditis you are unable to do anything for him. Vaccine treatment, serum treatment, nothing seems to be of any use, and yet this patient must be immunizing himself

all the time; he is casting off clumps of bacteria into the blood stream.

These vegetations, these masses of bacteria at any rate—don't confuse the two, they are not synonymous—are continually bathed with blood, and the strange thing is that this blood contains the immune bodies.

If you have a case of puerperal sepsis and take a blood culture, in less than twenty-four hours you have a copious growth. If you get a negative blood culture by the end of twenty-four hours, you can be almost certain that there are no bacteria in the blood at that moment. That is not true of endocarditis. We always keep the blood cultures a week. We usually keep them ten days before giving a final negative report, and if you care to keep them for three weeks you will get even a higher percentage of positive cultures. If you keep the culture for ten days, one day you may see that it is cloudy. What has happened? The bacteria have been there all the time and something has prevented their growing. I don't know what it is, but I suppose it must be some immune substance that is present in the blood and gradually this breaks down, and when it goes the bacteria grow.

You would think that those immune substances washing the bacteria would sterilize the vegetation, but they don't.

These are the sort of theoretical considerations we want to have in our minds when we plan an attack on this disease. I am certain this is a disease which ought to be treated successfully in the future.

Another very interesting thing is this (and it raises the importance of tissue immunity as compared with blood immunity): These vegetations stick in the glomeruli of the kidney and give rise to one of the most characteristic symptoms of the disease, hematuria in small amount. Yet if, when the patient dies, you examine his kidney, you don't find active inflammation in the glomeruli, except perhaps in one or two glomeruli. In most cases it is not active, it has died down. We find fibrosis. We don't find living bacteria there. The kidney has killed the bacteria, which shows that tissue immunity may be more important than blood immunity. The whole of immunity is not wrapped up in the blood. The tissues have an enormous lot to do with it.

This disease does not start upon healthy valves; it starts on pathological valves. There are two great forms of pathology that may affect the valve first. One is rheumatic endocarditis. The patient who has had previous attacks of rheumatic fever and may develop this disease. The second form

is congenital disease of the heart, a point which was emphasized by Osler many years ago, that patients with congenital heart defects have a curious tendency to develop subacute bacterial endocarditis. The reasons for that we won't go into now.

Multiple embolism is the most characteristic of all the features of this disease, and whenever you suspect that a patient is suffering from this disease, you want to look out for multiple embolism. We look in the skin and kidney; we look for petechial hemorrhages in the skin, and we have to look for them continually because they come out and disappear in a few days, often on the abdomen, the trunk or the limbs.

You can see why multiple embolism is so common in this disease, because it is the easiest thing in the world for that vegetation, or for a bit of it, to become broken off and to sail off into the blood stream and stick in the vessels. As we have seen it sticks in the capillaries of the glomeruli and produces an acute reaction there, with bleeding into the capsular space, so that red blood cells are found in the urine. Usually you have to look for them under the microscope. I don't say blood in the urine; I say red blood cells. We find emboli in the brain and in many other places.

The next feature of this disease is the presence of a positive blood culture, which, however, may have to be looked for on a number of occasions.

Thirdly, continuous fever without any evident explanation. Whenever we have foreign proteins thrown off in the blood stream we get fever, and that very likely is the cause of the fever in this case.

Another fundamental symptom is the presence of endocarditis, particularly of a progressing endocarditis. Also enlargement of the spleen, which we get in any form of septicemia, and this, after all, is a chronic septicemia.

What, if any, is the relation of this disease, subacute bacterial endocarditis, to rheumatic endocarditis? I have said nothing about the microscopic picture. There are polymorphonuclears, but in addition to that we have many of the large mononuclear cells. Although that is very different from the Aschoff body, if you have examined a sufficient number of cases, you will find intermediate cases which seem to provide a connecting link between subacute bacterial endocarditis and rheumatic fever.

Are these two different diseases, or are they two manifestations of one disease? We used to talk—at any rate our forebears did—about *tabes dorsalis* and general paralysis as something super-

added to syphilis, something which would develop in a syphilitic patient. We now know that these are late manifestations of syphilis, manifestations in a body which has become sensitized or allergic. Should we say that with regard to subacute bacterial endocarditis? I am not prepared to answer the question, but I think it is sometimes a good thing to ask questions which you can't answer, because it gives us all something to think about.

Here we have this peculiar fact that in a large number of cases of subacute bacterial endocarditis we have a rheumatic history, or we find evidences of rheumatism in the heart, even where there is no history. Secondly, they both seem to be due to a streptococcus; and thirdly, we have intermediate lesions, cases in which it is very difficult to say if it is actually rheumatic or subacute bacterial, and it may be that the more serious disease which is usually seen in adults compared with the rheumatic disease affecting the child is merely a late development of rheumatic fever in a sensitized patient.

DISCUSSION

DR. J. O. ARNSON (Bismarck, N. D.): Dr. Boyd's apology I am sure is not necessary, because all the great clinicians, including Osler, were primarily pathologists. It was a great pleasure to see the pathological pictures of endocarditis brought out so strikingly in his discussion.

The pathology of every disease is the cause of the symptoms. It would be rather presumptuous of me to discuss the pathology of endocarditis, so I will ask your indulgence while I try to point out a few of the clinical features of this very important disease.

In spite of the fact that it was in 1869 when this condition was first described so well that merely refinements in the pathology have been added to it, this is a new proposition to all of us. From clinical experience it seems to me that we pay too little attention to the heart, especially in connection with acute rheumatic fever.

Not very long ago I heard Dr. Longcope of Baltimore, in presenting a case of acute rheumatic fever, ask the clinicians who were present to forget about the joint manifestations in acute rheumatic fever and think of it as heart disease, because in acute rheumatic fever the joint symptoms are simply an incident, and we never have any serious joint complications from acute rheumatic fever as we do from the more serious rheumatoid arthritis. If we remember that the heart is of primary importance in dealing with acute rheumatic fever, and keep our eye on the heart for a long time afterward, we will have done a great service to our patient.

Another thing that I was glad Dr. Boyd brought out was the role of the myocardium in endocarditis. All cases of endocarditis die of a failing myocardium. It is the myocardium that fails, and he has pointed out the reason very well.

Our only interest in the murmurs that we hear as a result of the valve defects is simply to make the diagnosis. So far as the importance of the diagnosis of subacute bacterial endocarditis is concerned, I think that is only from the standpoint of the prognosis, because once we make a diagnosis of subacute bacterial endocarditis, the prognosis is very poor.

I shall say very little about subacute bacterial endocarditis, and confine my remarks to rheumatic fever or the endocarditis following acute rheumatic fever, because these are the cases of cardiac decompensation and cardiac embarrassment that we have to deal with. We have always considered that mitral stenosis was more serious than mitral regurgitation, and to a certain extent that is true. Mitral stenosis as a rule will throw a greater load upon an already weakened myocardium and therefore embarrass it more, and probably it is more important from that standpoint, but do not forget that a very high-grade mitral regurgitation can also throw a very embarrassing load upon the myocardium. So many people, when they diagnose a mitral stenosis, wait until the appearance of the presystolic murmur and the accentuation of the first sound. If you want to conserve a heart you must diagnose mitral stenosis before you get the pre-systolic or the typical textbook picture. The early murmur is the mid-diastolic rumble that is heard best at the apex.

Another thing regarding mitral murmurs is the fact that in a mitral stenosis, usually the greater the degree of the stenosis the more intense the murmur, but in mitral insufficiency the reverse is true. In mitral insufficiency the greater the insufficiency the less intense the murmur; and the smaller your insufficiency the more intense the murmur.

One of the most important relationships, I think, of endocarditis is pregnancy. This is a very important subject to the average practitioner. It is always a serious proposition. Of course, the more serious the lesion or the greater the degree of the endocarditis, the more embarrassment the pregnancy adds to the heart.

Cammeltoft sometime ago gave an analysis of his studies on this subject, and in forty-nine cases of mitral disease he found that thirty-five were distinctly aggravated by pregnancy. Of thirteen

cases of mitral stenosis, two died as a direct result of the pregnancy, four of them were made permanently worse, and only seven regained their previous health.

Serious myocardial failure complicating pregnancy is an indication for the termination of the pregnancy.

The treatment of endocarditis is the treatment of myocardial failure. We all know that the southern climates, which are more salubrious, are very beneficial to acute rheumatic fever or to rheumatic conditions, and recently there has come to my attention a little work that has been done on the climatic treatment of endocarditis. Dr. C. F. Roche, of Miami Beach, Florida, wrote me a letter a short time ago in regard to this. He has been collaborating with Drs. Paul D. Wentz of Boston and Paul T. Duckett Jones in a treatment in Florida of six cases of acute rheumatic fever and endocarditis complicating acute rheumatic fever. He says:

"The children, consisting of three boys and three girls, ranging in age from six to eleven, were sent to Miami Beach under Dr. Roche's observation. They all had been confined for varying lengths of time at the House of the Good Samaritan in Boston. They arrived in Miami last November and will leave the latter part of June, covering a period of about eight months' observation. The children were all in an active stage except one child who was having a definite febrile reaction each day and who had been and was, for a considerable time after his arrival, confined to bed. This child just mentioned was the only one of the six to have an aortic lesion in addition to the mitral stenosis and regurgitation, which was the only lesion in the other five. They had not thought at any time of correcting any of the structural changes in the heart, such as existed, but they felt because rheumatic endocarditis was not endemic in Florida and because of the equable climate, they might observe freedom from exacerbations and the customary activity of the endocardium.

This has proved to be the case, and it has been very gratifying to note that these children have been entirely free from any flare-up of their condition since arriving. I might add that they all gained weight, from 74, to 88, from 57 to 80, 38 to 51, 46 to 61, 44 to 54½, and 38 to 55. They were all robust, and the climatic influence on endocarditis complicating rheumatic fever has been shown to be a very beneficial one."

OPEN TREATMENT OF FRACTURES*

By E. W. HUMPHREY, M. D.

MOORHEAD, MINNESOTA

At the risk of being called a fanatic or a man of one idea, and fully conscious of the fact that I shall be stating convictions more or less at variance with perhaps a majority of professional opinion in presenting these views, based on what commonly would be thought to be a considerable body of experience—100 cases—I ask simply that you accept my presentation of this subject as just mine, and fairly and honestly mine—and let it go at that.

As you all know, the open treatment of fractures is and has been subjected to controversy in the two schools of modern thought in the medical profession. The one lauds, the other condemns, and I dare say that, in a certain measure both are right. However, I am not here to condemn or criticize, but to offer my reasons for my conclusions on the subject of the open method of treatment, and why I consider it the most satisfactory in cases in which it is applicable at all.

When closed reduction insures good approximation and the probability of satisfactory functioning, the open operation is not considered at all in the Moorhead Clinic. Our collective opinion is that when a closed reduction will afford less than 60 per cent approximation in the weight-bearing bones, and when deformity and loss of function will be diminished, the open operation is indicated. In this connection the Roentgenogram is a valuable aid in diagnosis, supplementing and confirming the clinical findings.

In doubtful cases the closed reduction has practically nothing in its favor, except the lesser chance of infection. In either closed or open reduction, the time employed is not a factor of importance. But the time consumed in healing and the more frequent adjustments of splints and braces, together with the more frequent changes of dressings, are factors extending the period of healing which constitute a very material disadvantage for the closed method. Then there is the approximation of fragments which, by the closed method, is almost never accurate. In estimating a less than 60 per cent approximation a while ago, it must be kept in mind that "less than 60 per

cent" is practically half a complete deformity, a condition very much to be avoided.

The open operation, on the other hand, allows nearly absolute approximation, earlier manipulation and motion, a considerable shortening of the healing period, and a far higher percentage of anatomical position with much superior functional results. There remains the one possible disadvantage—the danger of infection. When I state that in a series of 100 cases over a period of fifteen years at the Moorhead Clinic there was only one case of infection, the inference is inevitable that infection was reduced to a minimum. The case of infection was a fracture of the anatomical neck of the humerus resulting in a dislocation of nine weeks' duration. It may be said here that the primary operation for fracture gives much better results than either secondary or delayed operation, and in skilled hands, the mortality is so small as to be negligible, and is certainly no argument against the open reduction.

The method of open reduction cannot be carried out as simply as can the closed reduction, but it is universally satisfactory and successful in the hands of the surgeon who has at his command a well equipped operating room, a well trained surgical staff, and a complete mastery of the technique of operation. The acute problem is the danger of infection, and this is eliminated when proper technique and aseptic precautions are observed.

We use, including Lane's plates, self-supporting screws, nails, phospho-bronze wire, Parham-Martin bands, staples, kangaroo tendons and chromicized catgut. Bone-screws, plates or ivory inlays are not used in our service, though they are successfully used by many surgeons. Incidental to all this some description of one or two of these appliances may be of interest.

Lane's plates need no description at this date; they have been in use too long by too many surgeons, but the Albee operation, in which the sliding grafts are substituted for the Lane apparatus is worth a word or two. Albee himself says that in using inlay grafts as a substitute for Lane's plates in ununited and fresh fractures, he uses a universal motor with a small saw for deep cavi-

*Read before the Northern Minnesota Medical Association, September 19 and 20, 1930.

ties, such as laminectomies, his own twin saw, and a device by which the distance between the saws can be adjusted. This outfit is not absolutely necessary. In favorable subjects the entire graft may retain its viability, the inlay method bringing together each of the four layers: periosteum, compact bone, endosteum, and marrow.

The bone graft is still more efficacious in gunshot or other fractures, where there is comminution or sequestration. In fresh fractures of large bones, to prevent the inlay from slipping into the marrow cavity, the grafts and gutter-beds are made wider at the periphery. With the fragments in proper alignment, the graft is usually removed from the fractured bone, generally the proximal fragment, and then slid distally into a groove one-half its length, prepared for it in the distal fragment. In the femur, the sliding inlay is usually made five or six inches long. In long bones, with difficulty of fixation, the inlay is held by bone-graft pegs, or heavy kangaroo tendon, or both.

The band of Parham-Martin is made on annealed steel and is passed around the fracture, the tongue end being passed through a slot at the other end, the band tightened and clamped about the fracture by a special instrument, and the surplus metal cut away. Use of the Parham-Martin band is recommended since it is easily applied with the "no-hand-touch" technique (of which more later); it introduces a minimum of foreign material, and it holds the fragments firmly in position.

Now, coming back to fractures and the open treatment at the Moorhead Clinic, it is of amazing simplicity as compared with any others, particularly the Albee. Our technique is as follows: The preparation of the patient begins the day previous to the operation. The skin at the site of the operation is thoroughly cleaned by shaving and the application of green soap poultices for three hours. This is removed, at the end of three hours, by washing first with sterile water, and then with an application of alcohol, ether, and gauze soaked in HGCL_2 . This is followed by the application of a large dressing held in place with a bandage.

When the patient has reached the operating room, the dressing is removed and the site of operation is again washed with two coats of iodine which is removed with alcohol.

The incision is made over the site of the fracture. The incision should be sufficiently large to facilitate the manipulation of instruments, and to avoid any necessity of enlarging it later.

Bleeding vessels are ligated, and the skin margins covered with towels held in place by continuous catgut sutures. The knife used for incising the skin is then discarded. The cut muscles are next separated by retractors to permit a view of the bone ends. The bones are grasped near the site of fracture with Lane's clamp. The bone ends are then freed from blood clots and muscle fragments by curettage, and enough extension is applied to overcome any over-riding. The over-riding may be overcome by bringing both ends out of the wound, approximating the fractured ends, and allowing the bones to return to their normal position.

Contrast with this simple method the method of Lathrop. Where there is over-riding or deformity, Lathrop puts in an Albee sliding graft, or puts the ends in position with clamps, and then fastens them, two holes being driven through each fragment in such direction that, when kangaroo tendons are passed through, they cross each other in the medullary canal and hold the ends in apposition without slipping. In overlapping or oblique fractures, the holes are drilled straight through, the gut being passed in and out, and tied as a mattress suture. Two of these are sufficient.

Once a reduction has been accomplished, it should be maintained by some suitable clamp, such as the Lane. A Lane plate is then applied and held in place while holes are drilled into the bones with a bone drill. The necessary number of screws should be firmly driven, the clamp maintaining the reduction should be removed and the incision closed with as little catgut as possible. A large dressing and a long supporting splint is then applied with a small amount of extension. Early immobilization is advisable in these cases.

The entire procedure is carried out by the use of instruments. The only person who touches the instruments with his hands is the surgeon, and he does so with gloves. The surgical nurse hands the instruments employed to the surgeon with forceps. The surgeon employed in this work must be complete master of the Lane technique, as should everybody concerned with this operation. If the proper technique and the proper precautions are observed as described, there will be no occasion to fear infection.

Open reduction is also the method chosen in the case of compound fractures with poor approximation of fragments. In these cases the wound is left open as long a time as is required to eliminate any chance of infection. There is no knowing what kind of organism may enter the wound; moreover, there is no guarantee that

the preliminary incision and cleaning has been sufficiently complete to prevent the introduction of any foreign body for the purpose of fixation. It is possible, of course, that fixation *may* be done without untoward results, but, in our opinion, it should never be done. The main concern, at this stage, must be a clean and closed wound, and the alignment, though it must be attended to, must be for the moment a secondary consideration.

From my study and experience of the open treatment of fractures, I have drawn the following conclusions:

1. That the open operation for the treatment of fractures is positively indicated in certain fractures; that it is indicated in all fractures which cannot properly be reduced by other methods; and in all articular fractures when the displacement, if uncorrected, may seriously interfere with the motion of the joint.

2. That the open treatment is superior to all methods in saving the time of both surgeon and patient, and altogether to be preferred to any other from the economic, financial, industrial and zodiacal points of view.
3. That the technique of operation, while not so simple as that employed for closed treatment, is far simpler and more effective than any other.
4. That the open operation aims at the exact replacement of fragments and achieves precisely that purpose.
5. That the period of recovery is shortened by about two-thirds as compared with the closed method.
6. That all of the contentions maintained in this paper are amply proved by the success of one hundred cases successfully treated by the open method at the Moorhead Clinic over a period of fifteen years.

This is the fourteenth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

By LEO G. RIGLER, M.D.

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MINNEAPOLIS, MINNESOTA

THE STOMACH AND DUODENUM

(Continued from Oct. 15 issue)

C. General Considerations of Abnormalities of the Stomach

1. Changes in size.

- a. Increased by
 - (1) atonicity
 - (2) obstruction at pylorus.
- b. Decreased by
 - (1) increased tone due to strong musculature,
 - (2) spasm
 - (3) pathological conditions such as ulcer, carcinoma, benign tumor, linitis plastica, adhesions, syphilis.

2. Changes in position.

- a. Displaced upward and to the right by
 - (1) gall bladder disease,
 - (2) gas in splenic flexure,
 - (3) large spleen,
 - (4) tumors in left upper quadrant.
- b. Displaced upward and anteriorly by
 - (1) adhesions,

- (2) pancreatic enlargement,

- (3) other masses in the inferior abdomen,
- (4) intestinal obstructions.

c. displaced downward and to left by tumors of right upper quadrant.

d. Displaced downward in ptosis the pathological significance of which is doubtful.

3. Changes in outline.

a. Spasm.

- (1) This may be local-incisura—usually due to ulcer opposite. It manifests itself as a finger-like projection into the lumen of the stomach usually on the greater curvature side, constant in appearance, not usually abolished by atropine.

- (2) This may be general especially in the pyloric third due either to intrinsic or extrinsic causes.

- (3) Transient spasms may be due to extrinsic irritations such as gall bladder disease, appendicitis, etc.

- (4) Pyloric spasm manifests itself as a failure to open within the usual minute or two after ingestion of a meal. It is most commonly associated with ulcer of either the duodenum or stomach but may be due to extra-gastric causes or in infants it may be a disease in itself.

b. Gastric lesions.

- (1) A contraction of one wall, shortening, rigidity, loss of roundness, fine irregularity, may be due to ulcer with scar, or scirrhus carcinoma.
- (2) A defect in the outline, constant in appearance, may be due to carcinoma or rarely a markedly callus ulcer.
- (3) A protrusion of the wall may be due to the crater of an ulcer,—*the niche*.
- (4) A diffuse change in outline may be due to linitis plastica, scirrhus carcinoma, syphilis.
- (5) Hourglass stomach, a marked contraction in the middle portion giving an hourglass or else a "B" shape to the stomach, is usually due to ulcer with scar and spasm; but may also be due to syphilis and rarely carcinoma.
- (6) A rounded, central, smooth defect is usually due to benign tumors.

c. Extrinsic defects may be due to pressure of a neighboring organ which is enlarged such as tumors of the pancreas, enlarged spleen, liver, etc. These are usually smooth.

d. Solid materials in the stomach give defects. Food must always be excluded as a source. Foreign bodies such as hair balls, etc., are occasionally seen. These defects are usually freely moveable.

4. *Changes in peristalsis.*

a. Increased associated with

- (1) Pyloric obstruction from ulcer of the stomach or duodenum.
- (2) Less common in pyloric obstruction of carcinoma.
- (3) Duodenal ulcer without obstruction.
- (4) In achylia and pernicious anemia waves deeper and more frequent.
- (5) With hyperacidity the same findings.

b. Decreased or absent.

- (1) With long standing pyloric obstruction especially of carcinomatous origin.
- (2) Local absence in an area of infiltration such as ulcer scar or carcinoma.

- (3) Irregularity or reversed near lesions of gastric wall or adhesions.

- (4) Peristalsis passing through an area of a benign tumor.

5. *Changes in motility.*

Emptying time for a carbohydrate meal if no food is taken in the interim is from 4 to 6 hours.

a. Increased motility or decreased emptying time occurs with:

- (1) achylia,
- (2) linitis plastica,
- (3) carcinomatous infiltration of the pylorus holding it rigid,
- (4) early duodenal ulcer,
- (5) with gastro-enterostomy.

b. Decreased motility occurs with:

- (1) ulcer of stomach or duodenum of obstructive type, especially ulcer of pylorus,
- (2) carcinoma near pylorus,
- (3) obstruction in duodenum,
- (4) pressure from extrinsic causes,
- (5) pyloric spasm from extra-gastric lesions (rare),
- (6) atonicity and ptosis of stomach (rare).

D. *Carcinoma of Stomach*

1. *General considerations.*

a. The following findings may be present:

- (1) Irregularity in outline or defect in contour with obliteration of the rugae in the portion involved.
- (2) Absent, reversed, or irregular peristalsis in a local area of the wall of the stomach.
- (3) Esophageal or gastric stasis.
- (4) Early emptying if the pylorus is held rigid.
- (5) Loss of flexibility of a portion of the wall on manipulation.

2. *Carcinoma of the cardia.*

This is the most difficult area to diagnose because of its normal irregularity, the normal absence of peristalsis, the inability to manipulate it. Examination in the supine, prone and lateral prone positions is of especial importance.

a. Special findings are:

- (1) Deviation of the stream of barium as it enters from the esophagus.
- (2) Irregularity of the stream.

(3) In the supine or Trendelenberg position defects more readily made out and the irregularity may be more than normal.

(4) The distance between the diaphragm and the superior surface of the stomach increased.

3. *Carcinoma of the body.*

a. Scirrhus type.

Gives a narrowing of the lumen, annular or one-sided, loss of peristalsis and flexibility, with little or no defect in the lumen. The gastric wall loses its normal rounded appearance, becoming straightened out with fine irregularities within it.

b. Adeno-carcinoma.

Gives a ragged, irregular, punched out defect in either contour—most common on the greater curvature side—with frequently areas of lessened density within the center of the shadow. These often resemble finger prints upon the normal homogeneous density. The rugae are obliterated in the area involved.

c. Cauliflower or polypoid type.

Numerous large, somewhat rounded filling defects may be present. These are often best brought out by using a small amount of pressure and a small amount of barium. The normal rugae will be lost in the involved area.

4. *Carcinoma of the pyloric portion.*

a. The pylorus itself may be infiltrated, thus remaining rigid and constantly open or may be pressed upon by a mass in the antrum and thus obstructed. With annular infiltration about the pylorus it tends to assume a funnel-shape rather than be rounded off as in spasm. With marked obstruction due to carcinoma, peristalsis in the stomach is not greatly increased as with ulcer and dilatation is not so extreme.

b. Obstruction at the pylorus may be present to such a degree that it is impossible to visualize it perfectly. Under these circumstances a callous ulcer of the pylorus could not be distinguished from a scirrhus carcinoma.

5. *Carcinomatous ulcer.*

Tends to be very large giving a niche with a broad base, triangular shape, with a defect on either side. Often other areas of infiltration appear. It is more likely to be central in position and irregular in outline than a benign ulcer.

6. *Differential diagnosis of carcinoma of stomach.*

a. Callous ulcer—increased peristalsis, small niche often seen, incisura may occur, filling defect

not marked, not so ragged or irregular.

b. Adhesions—variable in appearance, no true deformity, inconstant, peristalsis hardly interfered with.

c. Syphilis—defect usually out of proportion to the symptoms and the condition of the patient.

d. Extra-gastric masses causing pressure—defect changing with change in position, wall flexible, smooth, and peristalsis passes through area of defect, displacement is marked, and by manipulation stomach wall can be separated from mass. Change of position may remove the defect.

e. Benign tumors—usually central defect, round, sharply circumscribed, smooth, may be moveable, and peristalsis passes through without hindrance.

7. *Operability of gastric carcinoma.*

The extent of the lesion may be determined and thus some indication as to operability made out.

a. Operable clearly—infiltration or defect confined to pyloric third.

b. Doubtful—infiltration or defect in middle third.

c. Inoperable—infiltration or defect in cardiac third.

It must be borne in mind that degree of operability depends upon the daring and skill of the surgeon. If he is willing to do a total gastrectomy, no case is inoperable. The presence of metastases to the glands or liver cannot usually be determined by roentgen examination except insofar as a marked deformity of the bulb may suggest pressure from a mass of glands.

8. *Value of X-ray examination.*

No case with gastric symptoms, especially if past the age of 40, should be permitted to go on without a competent roentgen examination of the stomach. In this way the earliest possible diagnosis of carcinoma can be made and the large mortality from this disease be reduced.

E. *Benign Tumors of the Stomach*

These may be polypi, fibromata, myomata or other rarer tumors, and manifest themselves clinically through their tendency to bleed. The x-ray characteristics are:

1. Central, rounded defect, obliterating the rugae.

2. Sharp, smooth, well circumscribed.

3. Frequently multiple.

4. Peristalsis passing clearly through the area of the tumor.

5. Often displacement produced by manipulation or change in position.

6. Polypi of the antrum occasionally prolapsing through the pylorus into the duodenal bulb, giving a filling defect there or vice versa.

7. Foreign bodies such as food particles giving a similar appearance but much more mobile and more transient.

8. *Value of X-ray examination.*

Because of their comparative lack of symptoms and absence of physical findings, benign tumors, unless very massive, are rarely diagnosed clinically. Careful roentgen examination should reveal them when present. They are much more common than has been supposed and the importance of recognizing and removing them lies in their tendency to become malignant.

F. *Gastric Ulcer*

1. *Direct signs* are:

a. The niche, the filling out of the crater of the ulcer with the barium giving a protrusion from the lumen.

b. Changes in the wall due to induration, i. e., some irregularity, loss of flexibility, loss of peristalsis.

c. Arrangement of rugae of stomach radiating toward an ulcer or an ulcer scar.

d. Changes in form of the stomach due to contraction and spasm especially with shortening of the lesser curvature.

2. *Indirect signs* are:

a. Incisura, a spastic indrawing of the gastric wall, occasionally seen, usually on the greater curvature opposite the ulcer, constant, but permitting peristalsis to pass through it, smooth, finger-like.

b. Pyloric spasm, rounding off of pyloric end, failure to open, with gastric retention and stasis. The stomach fails to empty in six hours.

c. Hypersecretion—the presence of considerable fluid in stomach before the meal is given.

d. Hyperperistalsis—increase in both number and depth of peristaltic waves.

e. Hypertonicity—drawing upward of the stomach which becomes transverse.

f. Marked increase in rugae on the greater curvature side.

3. *Special findings.*

a. Mucoid ulcer may show only:

- (1) incisura,
- (2) radiating rugae,
- (3) spastic pylorus, hyperperistalsis, hypertonicity, hypersecretion.

b. Indurative type may show only:

- (1) shortening and contraction of stomach wall,
- (2) infiltration of wall with break in peristalsis,
- (3) often gastric stasis.

c. Pre-pyloric ulcers show often:

- (1) marked irregularity on lesser curvature with loss of peristalsis,
- (2) shortening of lesser curvature,
- (3) incisura on greater curvature,
- (4) frequently pyloric obstruction.

d. Penetrating ulcer gives as its characteristic sign:

- (1) the niche which is pathognomonic of ulcer but must be constant in its appearance while peristalsis does not pass through it. It must not be confused with the protrusion of the stomach between two peristaltic waves or with small amounts of barium in the small intestine behind the stomach. Neither of these are constant. A diverticulum of the small intestine may simulate a niche and be constant. Rotation of the patient will eliminate this, showing the posterior position.

(2) a fleck of barium may be present after the stomach has emptied itself.

(3) any of the other signs of ulcer.

e. Posterior wall ulcer is best shown by the use of a small amount of barium and pressure which will permit the niche to be outlined as a dense area which does not disappear on pressure as does the remainder of the barium. These are often covered up by filling the stomach too full. Rotation of the patient may reveal them but not always.

f. Perforating ulcer may give an accessory pocket which has the following findings:

- (1) A large mass of barium, rounded or irregular, separate from the body of the stomach, will appear.
- (2) By manipulation a small sinus can be traced from it to the stomach.
- (3) In the upright position it will show a gas bubble just as the stomach does.
- (4) It is not moveable and remains filled often after the stomach has emptied itself.
- (5) The accessory pocket is pathognomonic of perforated ulcer.
- (6) It must be distinguished from diverticulum of the small intestine by the demonstration of its connection with the stomach and its lack of mobility.

g. Hourglass stomach is often due to ulcer. The niche on the lesser curvature can be made out with a marked constriction on both sides due partly to spasm and partly to scar.

4. *Healing of gastric ulcer.*

Repeated roentgen examination of patients with gastric ulcer after onset of medical treatment may reveal a startling diminution in size of the niche and frequently its complete disappearance in a comparatively short period of time. The changes in peristalsis and flexibility of the gastric wall may, however, remain. This roentgen observation of the diminution in size of the crater is an important sign differentiating the benign from the malignant ulcer.

5. *Value of X-ray examination.*

No diagnosis of ulcer of the stomach is complete without a demonstration of the ulcer signs by roentgen examination. There are, doubtless, some few ulcers which cannot be clearly seen such as those on the posterior wall of the cardiac end, but they are the exception. Both positively and negatively, a competent roentgen examination gives the most reliable criteria of diagnosis.

G. *Syphilis of the Stomach.*

This is a rare condition and the diagnosis is difficult. It is best diagnosed clinically. The chief findings are:

1. A gastric defect resembling carcinoma is the most striking.
2. This is often far out of proportion to the symptoms or general condition of the patient.
3. Gastric stasis is very uncommon.
4. Multiple ulcers with marked fibrosis may be present. The multiplicity and tendency toward marked deformity helps to distinguish from peptic ulcer.
5. Occasionally an hourglass deformity is produced.

H. *Chronic Gastritis*

A hypertrophic change in the gastric mucosa may manifest itself by a marked increase in size of the rugae. This is best seen on the greater curvature which becomes markedly rough and irregular but may also be seen in the body of the stomach.

I. *Linitis Plastica* (leather bottle stomach)

This gives a diffuse narrowing of the whole stomach which becomes extremely small. The meal pours through, without stopping, into the duodenum which is greatly dilated. The stomach walls are entirely rigid, immobile, lacking in peristalsis. Very extensive scirrhus carcinoma may give the same findings.

J. *Foreign Bodies*

Hair balls, masses of undigestible food, such as fruit rinds, occasionally occur giving characteristic large defects sometimes showing septa of barium within. These are usually very freely moveable and can be easily displaced. Peristalsis passes freely through the area of the defect.

K. *The Operated Stomach*

1. *Gastro-enterostomy* produces:
 - a. A high transverse stomach.
 - b. The stoma or opening readily made out with the dilated bowel below it.
 - c. A marked irregularity in the region of the stoma with radiation of the rugae toward it.
2. *Gastro-jejunal ulcer* gives:
 - a. A niche usually in the jejunum near the anastomosis.
 - b. Spasm at the stoma with retention.
 - c. Marked irregularity at the stoma and a narrowing of the small intestine.
3. *Gastric resection* may show:
 - a. The remaining portion of the stomach assuming a funnel shape.
 - b. Dilation of the small intestine at the anastomosis.
 - c. Irregularity at the anastomosis hard to differentiate from recurrence of carcinoma.
 - d. Recurrence of growth shown by marked filling defects.

L. *Diverticula of the Stomach*

These are rare, practically always occurring on the posterior wall in the cardiac third. They are best shown in the lateral position as a pocket of barium, smooth in contour, rounded, and connected to the stomach by a small sinus.

M. *Pylorospasm and Pyloric Stenosis of Infants*

The barium meal is given, only a 20 per cent mixture of barium sulphate and water being used. It must usually be given by stomach tube. The pylorus should open and permit emptying within at the longest ten minutes. Prolongation usually indicates spasm while failure to open for one-half hour or more usually indicates pyloric stenosis. A failure to empty in six hours usually indicates pyloric stenosis.

N. *Summary of Value of X-ray Examination*

Although the roentgen examination will reveal practically all of the organic lesions of the stomach, it must be remembered that many functional conditions produce symptoms and the roentgen examination may be negative under these conditions.

(To be continued)

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. Many physicians have expressed interest in this type of study and therefor the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Autopsy-31-1227

Man, 28, admitted to hospital at 9:35 A. M., July 15, 1931, unconscious. Apparently he had been well up to several days before entrance, at which time he complained of dizziness and headache. It was stated that he had a slight convulsion 2 days prior to admittance but seemed perfectly rational after a few minutes. At 6 A. M., July 15, he had a generalized convulsion and another at 7:30 A. M. He had been entirely unconscious since that time. Nothing of importance was derived from the past and family history.

Examination: unconscious white male; pupils fixed with right pupil slightly larger than left; right disc was slightly cloudy; left disc normal. No rigidity of the neck. Many bubbling rales throughout both lungs. Neurologic examination: generalized spasticity of the entire body with marked hyperactivity of the reflexes, especially notable on the right side; bilateral positive Babinski; Brudzinski negative; Kernig negative.

During the stay in hospital there was a rapid rise in pulse rate and temperature with continued unconsciousness. Death at 2:30 P. M. the same day.

Spinal puncture, done in the receiving room, showed marked increase of pressure and gross blood; another done in the afternoon showed essentially the same findings. Spinal Wassermann was negative.

Postmortem report. No edema. No excess of fluid in the serous cavities. Transverse measurement of the heart 11 cm.; weight of the heart 325 grams; no disease of the coronary arteries. Mild atheroma of the aorta. Lungs normal. No passive congestion of the liver or spleen. Kidneys 195 grams and 190 grams; slightly granular surfaces. Examination of the brain shows a diffuse subarachnoid hemorrhage of moderate degree; both lateral ventricles and the third ventricle are filled with blood; there is a large necrotic area in the occipital lobe adjacent to the lateral ventricle, 3.5x4 cm., and a similar necrotic area in the frontal lobe adjacent to the lateral ventricle. A large artery leading to the posterior necrotic area is thrombosed.

Diagnosis. Infarction of the brain (encephalomalacia) due to thrombosis of a large artery.

The hemorrhage was caused by the softening of the brain tissue adjacent to the lateral ventricle. The subarachnoid hemorrhage was due to the escape of blood through the floor of the third ventricle. No blood pressure reading was recorded in this case so that it cannot be determined whether hypertension was a factor. The degree of arteriosclerosis was slight and does not account for the thrombosis. Presumably the thrombus was on an infectious basis but the nature of the infection was not determined.

Autopsy-31-1468

Woman, 56, admitted September 1, 1931, complaining of shortness of breath and weakness. Six years prior

to entrance she had suffered from what she called a "stroke" and was in bed several months. Following this her left leg was much weaker than the right. Three years before entrance she had an attack of dyspnea, and spent the better part of a year in bed. From that time she had been a semi-invalid, due to weakness; she became tired easily. The onset of the present illness was two weeks before entrance, when she developed a cold and her weakness increased. A few days later she noticed difficulty in speech and began raising a large amount of phlegm.

Examination showed an aged white woman, lying propped up in bed, and definitely short of breath. She was markedly cyanotic and the breathing was characterized by loud crackling rales. The lenses were opaque, so that the fundi could not be examined satisfactorily. Blood pressure 208/106. The chest was dull below the 5th interspace on the left mid-axillary line and there was hyperresonance above; there was dullness below the 6th interspace in the right mid line and dullness posteriorly in the 8th interspace. Coarse gurgling rales were heard throughout the chest. Percussion showed no definite enlargement of the heart. Clinical diagnoses considered were primary hypertension, myocardial insufficiency with congestive heart failure, and possible hemorrhage into the cerebrum.

No laboratory work was done because of the short stay in hospital. The patient became progressively worse, failed to respond to cardiac stimulants, and died the same day, about four hours after admittance.

Postmortem report. Slight pitting edema of the ankles. The mouth is edentulous. No excess fluid in the serous cavities. The heart weighs 214 grams; slight calcification of the base of the aortic valve but no apparent functional disturbance. There is moderate thickening and calcification of the walls of the coronary arteries but no marked narrowing of the lumens at any point; no areas of fibrosis or softening in the myocardium. The lungs show moderate edema and congestion but no areas of pneumonia. No passive congestion of the liver or spleen. The kidneys weigh 140 grams and 122 grams. The surfaces are slightly granular. No hemorrhage on the surface of the brain. On removal of the brain a tumor mass is found below the tentorium. The mass is firmly lodged in the foramen and extends slightly above it. It is 4 cm. in diameter and presses against the medulla, particularly on the right side. There is marked atrophy of this portion of the medulla. The mass is easily stripped from the surface of the medulla. On section it is found to be an old, partially organized hemorrhage, encapsulated by fibrous tissue. It is not related to the vertebral artery.

Diagnosis. Old encapsulated hemorrhage, pressing upon the medulla, especially on the right side.

Apparently this hemorrhage occurred 6 years before admission. Her subsequent symptoms, including the

hypertension, were presumably due to pressure on the medulla.

Autopsy-31-1489

A woman, 55, was admitted to hospital June 7, 1929, complaining of paralysis on the right side. There had been cardiac symptoms for two years with intermittent decompensation. Some varicose veins were removed about one month before admission. The patient got along fairly well until about noon on June 6, 1929; at this time she had a feeling of weakness in the right foot and leg. In a very few minutes the right hand felt numb and she became unconscious. After a few minutes she regained consciousness but was unable to talk and could merely utter a mumbling noise.

Ten or twelve years prior to admission she had a left hemiplegia from which she was practically recovered in two weeks.

She had urinary incontinence of one day's duration on the day of admission.

Physical examination revealed a well developed, well nourished white woman, lying in bed. The pupils reacted to light and accommodation and were equal and round. The chest showed no evidence of abnormalities. There was a slight enlargement of the heart to the left with no murmurs, arrhythmia, or thrills. The blood pressure was 205/130. Neurologic examination showed a dragging of the right side of the mouth; otherwise the cranial nerves showed nothing of importance. The superficial reflexes were absent but there was diminution of the tendon reflexes on the right and some retarding of sensation on the right. Clinical diagnoses were right hemiplegia, essential hypertension, hypertension heart, and incontinence.

On January 12, 1931, the patient seemed to have regained some use of her right side and was able to be up and around in a wheel chair. On May 14, 1931, she became incontinent and the right side paralysis became complete. Blood pressure remained constantly around 200/120. On June 9, 1931, the heart became irregular but this was interpreted as being the effect of general weakness rather than of a primary cardiac decompensation and digitalis was not given. The temperature remained constantly normal until two days prior to death at which time it rose to 104°. The pulse was 120 at the same time. The patient's symptoms became progressively worse and she died on September 7, 1931.

Routine examinations of the urine showed nothing of importance. The Wassermann was negative. The blood creatinin was 1.4 mg. and the urea nitrogen 20.3 mg. per 100 cc.

Postmortem report. No edema. The mouth is edentulous. A small decubital ulcer over the sacrum. No excess of fluid in the serous cavities. Heart 9.5 cm. in width and weighs 292 grams; marked calcification of the coronary arteries but no definite narrowing of the lumens; no areas of fibrosis or softening in the myocardium. Extensive bronchopneumonia in both lower lobes. No passive congestion of the liver. Two large stones in the gallbladder; bile ducts patent. Spleen normal. Right kidney 100 grams, left 104 grams; very marked granular pitting of the surfaces. Marked atheroma and calcification of the aorta, more severe in the abdominal portion; atheromatous ulcers in the abdominal portion. A slight excess of subarachnoid fluid but no hemorrhage in the subarachnoid space. In the central part of the left hemisphere, involving the internal capsule, is a brownish softened area 1.5 cm. in diameter. Marked sclerosis of the large vessels at the base of the brain.

Diagnoses. Primary hypertension; old cerebral hem-

orrhage; bilateral coalescent bronchopneumonia.

Apparently the hemorrhage occurred in 1929. The periods of improvement were probably due to partial absorption of the hemorrhage. The bronchopneumonia was a terminal complication.

Autopsy-31-75

A man, 36 years old, was admitted to hospital in an unconscious state on January 14, 1931. The history as given by relatives indicated good health with the exception of headaches for about 20 years. In the last few years they had been somewhat less severe than formerly. At 1 P. M. on the day of admission he had been down town shopping, when he became unconscious. Two years previously he had had an insurance examination and was accepted. There was no family history of hypertension.

Examination showed the patient in Cheyne-Stokes respiration. Pupils were small and irregular. The heart had normal rate and rhythm and there was no apparent enlargement. Blood pressure was 186/140. The reflexes of the upper extremities were decreased. The right knee jerk was increased. Babinski was positive on the right. The left knee jerk was decreased. The patient was of very stocky build and quite obese. He died three hours after admission. The clinical diagnosis was cerebral hemorrhage.

Postmortem report. The body is of stocky build, very obese, and weighs about 220 lbs. No edema. About 200 cc. of clear fluid in the right pleural cavity; no excess fluid in the other serous cavities. The heart weighs 560 grams; marked left ventricular hypertrophy; no disease of any of the valves; moderate atheroma of the larger branches of the coronaries with occasional nodular intimal thickenings; the descending branch of the left coronary in its lower portion is almost completely closed by intimal thickening; only a pinpoint lumen persists. No areas of fibrosis or softening of the myocardium. Massive edema of the lungs, the right weighing 1,020 grams, the left 800 grams. No passive congestion of the liver or spleen. The left kidney weighs 260 grams, the right 280 grams; terminal congestion; no evidence of disease. Many phleboliths in the prostatic plexus. Mild diffuse atherosclerosis of the abdominal aorta.

No hemorrhage in the subarachnoid space. The left lateral ventricle is distended with clotted blood, the hemorrhage evidently coming from a tear in the lenticular nucleus. The primary lesion is hemorrhage in the lenticular nucleus below the floor of the ventricle. Some blood has escaped through the roof of the fourth ventricle. The large vessels over the base of the brain show only moderate atheroma.

Microscopic sections of the basal nuclei near the area of hemorrhage show marked thickening and hyalinization of the small arteries.

Diagnosis. Primary hypertension with cerebral hemorrhage from rupture of a small artery.

SUMMARY. These four cases illustrate four types of cerebral lesions. The first case illustrates infectious thrombosis in a young man; this is supposed to be due to a blood stream infection and is independent, in this instance, of endocarditis and arteriosclerosis. The second case illustrates the effects of an old hemorrhage situated in the meninges and exerting pressure upon the medulla; this is a very unusual lesion. The third case is an example of cerebral hemorrhage occurring with primary hypertension about two years before death. The fourth case is typical cerebral hemorrhage associated with primary hypertension and sclerosis of the small arteries of the brain.

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PHYSICIANS' INVESTMENTS

We resent the oft-heard statement that physicians as a class are poor investors and easy-marks; not because it is not true, but rather because such implication of credulity makes them the outstanding target for scheming salesmanship.

Those who have suffered from the recent deflation should now be in a mood to put their house in order from the foundation up. We speak of foundation first because it is the most important. The cause of most catastrophes has been due to its neglect. It is folly to begin the building of any structure except at this point. If time is limited for completion, even then it is better to have builded this portion alone, because without it no superstructure can be counted on to endure. The foundation does not appear to bring the financial returns that the building above it does, but it will stand as an asset upon which to rebuild when the storms of adversity have swept the latter away.

What do we mean, then, by "foundation" when used in this sense? We mean that the most conservative investments should be made first, and only such should be made until a substantial reserve has been created. The superstructure may be speculative and ornamental only when the reserve is strong and enduring. Life insurance comes among the first items in such a list. It is the only thing one may possess the value of which on the day of death one can be sure of. Every physician who is insurable, especially if he has dependents, should start his estate with this. If his experience with other types of investments proves disastrous, he may well return and even confine himself to this. Conservative bonds of triple A, double A and an A rating may next

be added. These, of course, are selected because of the safety of principal rather than income return. Government Bonds may be included, providing it is one's own Government. Bonds that comply with the restrictions imposed by law for the investment of savings banks and trust funds may also be chosen.

Although it is highly desirable for professional success that only such commitments be made as will insure tranquillity and peace of mind from business worries, yet there will come a time when speculations may be considered. These are of many and various types and information or advice is of doubtful value. There is little to rely upon except the very vicissitude that makes it dangerous. Trial and Failure are the best teachers, and when individual suitability for any one has been found it should be heeded.

A. E. H.

MEDICAL ETHICS AND ADVERTISING

Dr. C. Jeff Miller, retiring president of the American College of Surgeons, and Dr. Allen B. Kanavel, president-elect of that organization have apparently caused a great deal of editorial comment on medical ethics through their addresses before the twenty-first annual congress of the College in New York last month.

In discussing "medical men and their lay critics," Dr. Miller said, "I find myself at a loss to explain the presence of these articles in magazines whose standards, one used to believe, were rather higher than the publication of half-truths and misrepresentations and downright falsehoods." The editorial staff of Printer's Ink expressed the opinion in the October 15, 1931 issue that the solution is found in the address of Dr. Allen B. Kanavel when he said, "Into our social structure have come many startling changes during the last decade and it is pertinent to ask whether some modification of our concepts of ethical practice may not be necessary to meet these changed conditions. The public resents decisions as to professional conduct made upon tech-

nical interpretation of our code and has rightly demanded action based upon the broad principles of social welfare. How far may education of the public go as to the standards of service of institutions or physicians connected with them, and not become immoral advertising?"

In a recent issue of the Minneapolis Journal under the title of "A Musty Code," an editorial appeared based upon Dr. Kanavel's address. In both editorials mentioned the opinion is expressed that the medical profession needs today more educational work with the public. Attention is called to the code of medical ethics now twenty centuries old which the medical profession is still following and which prevents the advertising which many editors feel is not only proper but necessary for the future of the medical profession and the good health of the public. Dr. Kanavel says, "The medical profession must realize the distinction between advertising for personal and selfish ends and that for the education and welfare of our people; must acknowledge that the principle of protection of the public, for which our code was established, may be better served by some change in our conception of the application of our rules."

Although we follow the old code of ethics, it seems apparent that our interpretation is changing rather fast. A few years ago, it was looked upon as a breach of medical ethics for a medical practitioner to appear before an audience composed largely of laymen. He was very likely to be reprimanded by the board of censors of his local medical society. Today, it is not uncommon for men engaged in the practice of medicine to speak on health subjects before Parent-Teacher Associations and other lay groups. If a lay group becomes sufficiently interested in health that it votes to have a lecture or a series of lectures on some phases of health and then selects a physician to give these lectures who is engaged in the private practice of medicine, the question arises as to whether it is bad ethics for him to accept the invitation. He has solicited nothing. Some medical societies accept this as good medical ethics. From the standpoint of the medical profession and the good health of the people, would it be better for the society to refuse the lay organization the opportunity to be instructed by the physician whom they know and in whom they have confidence and substitute an institutional

physician on a full-time basis of whom they know nothing and in whom they have not developed confidence?

It is not so long ago since the medical men in practice who prepared articles for popular magazines were subject to much criticism by the members of their profession. Perhaps they had unusual ability in this field, ability which had been recognized by the editors. Perhaps the editors had recognized the growing demand for the discussion of health subjects in their magazines and had even requested these particular physicians to prepare the material. Today, a far more liberal view is taken in many medical societies. Witness the method which has been employed in Philadelphia for a number of years where practitioners of medicine actually prepare and sign newspaper articles for the Sunday editions.

A tremendous attack is being made upon well qualified health workers, particularly those constituting the nursing, the veterinary, and the medical professions. The attack is a fairly well organized one. It is read in the press, it is seen on the motion picture screen, and it is heard in the public lecture and even over the radio. Many editors, who seem to have a good grasp of the situation are of the opinion that this attack can best be met by the same weapons employed by the opposition, an important one of which is advertising. They do not have in mind such advertising as quacks and charlatans use but good wholesome educational work where the element of personal gain is absent. In the medical profession of this country, we have some very prominent citizens. Many of them are nationally known, some have international reputations based upon their contributions. Much of what they say and a considerable part of what they do constitutes news. The public craves knowledge of their activities. One cannot help but ask the question whether their influence for the profession and the public good should be curbed or whether we should take great pride in their accomplishments and express a desire to see them do all that they possibly can in their short life times to promote the good health of our nation.

Apparently many local medical societies in this country are thinking of the subject of medical ethics as it pertains to the health education of the public. The question is how can the problem best be solved? Not too much time should be spent in procrastination.

J. A. M.

SOCIETIES

Minnesota Radiological Society

A joint meeting of the Minnesota Radiological Society, the Iowa X-ray Club and the Radiological Section of the Wisconsin State Medical Society was held at the Mayo Clinic, Rochester, Minnesota, October 17, 1931. The Societies were honored by the presence of Dr. Charles H. Mayo, who delivered an address of welcome, and Dr. Lewis Gregory Cole of New York, who was the guest speaker. The following program was presented:

1. Round table discussion of gastro-intestinal diseases.
Conducted by Dr. Lewis Gregory Cole, New York.
2. Benign tumors of the stomach.
Dr. Leo G. Rigler, Minneapolis.
Discussed by Drs. L. G. Cole, J. D. Camp, C. G. Sutherland.
3. Fractures about the ankle joint.
Dr. M. S. Henderson, Rochester.
Discussed by Drs. W. H. Ude and G. T. Nordin.
4. Results of radiation therapy in carcinoma of the skin.
Dr. L. G. Erickson and Dr. K. W. Stenstrom, Minneapolis.
Discussed by Drs. Gage Clement, Hamilton Montgomery and S. W. Harrington.
5. Intrathoracic tumors.
Dr. S. W. Harrington, Rochester.
Discussed by Drs. C. H. Mayo and L. G. Rigler.
6. Tuberculosis in children.
Dr. T. A. Burcham, Des Moines.
Discussed by Drs. E. S. Hewitt, Arnold Anderson, L. G. Rigler.
7. Bone changes in hyperparathyroidism.
Dr. John D. Camp, Rochester.
Discussed by Drs. J. deJ. Pemberton and R. M. Wilder.

Following the banquet the principal address of the meeting was delivered: Correlation of the roentgenologic appearance with the pathologic changes of gastric ulcer. Dr. Lewis Gregory Cole, New York.

LEO G. RIGLER, M.D., Secretary,
Minnesota Radiological Society.

NEWS ITEMS

{ We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession. }

Dr. J. A. Eckrich, has been elected to head the department of internal medicine, at the Aberdeen Clinic.

Dr. Franklin S. Raiter, one of the prominent physicians of Cloquet, Minn., has filed as a candidate for mayor of that city.

Dr. Herbert Hayward, Hamilton, Montana, has been awarded the degree of fellowship by the American College of Surgeons.

The Montana State Board of Medical Examin-

ers have issued licenses to seven new physicians to practice medicine in that state.

Mrs. Mildred Isaakson, was elected president of North Dakota State Nurses' Association at the 19th annual meeting recently held at Bismarck.

Dr. W. A. Bates, Aberdeen, S. D., of the Lancet editorial staff, is in New York attending the meeting of the American Congress of Surgeons.

Dr. B. C. Murdy, Aberdeen, S. D., was a visitor at the annual meeting of the International Medical Assembly held at Milwaukee last month.

Dr. A. F. Grove, Dell Rapids, S. D., was in attendance at the American College of Surgeons last month, where he received the degree of Fellowship.

Dr. E. L. Strader, formerly superintendent of the Deerwood Sanitarium, has accepted a position on the staff of the Glen Lake Sanatorium, Minneapolis.

Dr. C. A. Stewart, Minneapolis, gave a very interesting address at the October meeting of the Stutsman County Medical Society held at Jamestown, N. D.

Dr. E. O. Church, Watertown, has taken over the practice of Dr. M. H. Clagett at Menno, S. D., for the winter months, as Dr. Clagett is to be absent in California.

Dr. E. Starr Judd of the Mayo Clinic, Rochester, was one of the principal speakers at both of the state medical meetings at Vermont and Delaware, last month.

Dr. H. W. Froehlich, Thief River Falls, Minn., was in New York City last month, spending several days at the annual meeting of the American College of Surgeons.

Among the large list of surgeons from the Northwest that will register at the annual meeting of the American College of Surgeons is Dr. R. S. Westaby, Madison, S. D.

Dr. Silas E. Brown, St. Paul, who has been in active practice for over 20 years, died last month at the age of 75 years. Dr. Brown was a graduate of the New York University.

Dr. L. N. Cosmey, who has been in practice at Halstad, Minn., for several years has disposed of his business and will take a two-year post-graduate course, specializing in eye, ear and nose.

Dr. W. F. Cogswell, secretary of the Montana State Board of Health has been advised that the headquarters of the Indian medical service districts will be located at Helena in the near future.

Dr. F. J. Mitchell, aged 52 years, who has been in active practice at St. Paul for the past 22 years, was accidentally shot to death while hunting near Albert Lea, with a party of friends.

Dr. A. E. Hedback of the editorial staff of the Journal-Lancet was in attendance at the annual meeting of the International Medical Assembly held at Milwaukee, during the week of October 19th.

Dr. Albert E. Kumpf, who has been in active practice at Hot Springs, S. D., during the past year, died last month after a short illness. Dr. Kumpf was a graduate of the University of Minnesota.

Drs. C. G. Lundquist, Leola and R. J. Jackson, Rapid City, have been named members of the Journal-Lancet editorial staff, by Dr. W. A. Bates, president of the South Dakota Medical Society.

Dr. Anton Kolodny, Sioux City, Iowa, was the principal speaker at the October meeting of the Sioux Falls Medical Society held at Sioux City. Dr. Kolodny presented an excellent paper on "Bone Tumors."

Dr. Ray Lemley is now associated with the Midwest Clinic at Rapid City, S. D. He will specialize in urology, rectal and skin diseases. Dr. Lemley is a graduate of the University of Minnesota in 1929.

Dr. John D. Simpson, aged 73 years and who has been in active practice for nearly 40 years in Minneapolis, died last month after a short illness. Dr. Simpson was a graduate of Northwestern Medical School.

A radio has been installed in the parlors of the Hennepin County Medical Society for the benefit of the doctors who want to hear the football returns on Saturday afternoons, or "Uncle George and the Kiddies," whenever that is.

Several changes have taken place among the Aberdeen physicians who are to be absent during the next few months. Dr. R. B. Wilson goes to California, Dr. H. R. Mahorner to New Orleans, and Dr. C. O. Hollinger to New York City.

The annual meeting of the Southwestern Medical Society was held at Slayton, Minn., last month and the following officers were elected: Dr. S. A. Slater, Worthington, president; Dr. J. T. Rose, Lakefield, vice president; Dr. W. E. McKeown, Pipestone, secretary-treasurer.

The 19th annual meeting of the North Dakota State Nurses' Association held at Bismarck last month was one of the most successful ever held, the attendance was large and from all sections of the state, and the program presented at each session was instructive and interesting.

Dr. A. C. Strachauer, Minneapolis, attended the annual meeting of the directors of the American Society for the Control of Cancer, held in

New York City October 10, also, the annual meeting of the Conference on Cancer Clinics of the American College of Surgeons.

The Park Region District and County Medical Society held its annual meeting at Fergus Falls, Minn., and elected the following officers: president, Dr. M. W. Kemp; vice president, Dr. O. V. Johnson; secretary-treasurer, Dr. E. A. Heiberg. Dr. A. J. Lewis of Henning is a delegate of this society to the State Medical Society.

The Pine and Chisago Medical association have combined with the association of Isanti, Anoka, Kanabec and Sherburne counties to form the East Central Minnesota Medical society. There are 26 members, 13 from each group that merged. Dr. H. C. Cooney of Princeton was elected president and Dr. G. E. Schoof of North Branch, secretary.

St. Louis County Medical Society held their annual meeting at Duluth and elected the following officers: Dr. N. H. Gilliespie, president; Franklin Raiter, first vice president; Dr. O. L. McHaffie, second vice president; Dr. M. McC. Fischer, secretary-treasurer; Dr. A. E. Olson, Dr. L. L. Merriman and Dr. G. C. MacRae, board of censors.

Dr. J. A. McIntyre has been elected president of the Steele County Medical Society at the meeting held in Owatonna, Minn. Other officers elected are Dr. E. W. Senn, vice president; Dr. D. H. Dewey, secretary-treasurer, and Dr. J. F. Smersh, censor for three years. Dr. A. B. Stewart was named delegate to the state society meeting.

The Wright County Medical Society held its annual meeting at Buffalo, Minn., and the following officers were elected: Dr. Ellison, Monticello, president; Dr. Roholt, Waverly, vice president; Dr. Catlin, Buffalo, secretary-treasurer; Dr. Freed, Cokato, delegate to Minnesota State Medical convention. A good program of paper was given by several of the physicians present.

The Aberdeen District Medical Society had the following speakers on their program for the evening of October 13th: "Intravenous Urography," Dr. P. V. McCarthy, Aberdeen; "Acute Ears in Children," Dr. J. D. Alway, Aberdeen; "Modern Procedures in the Treatment of Prostatic Disease," Dr. Gilbert J. Thomas, professor of Urology, U. of M. Medical School, Minneapolis, Minn.

"The first fall meeting of the Cass County Medical Society was held at Fargo, September 25th. Dr. J. B. James of Page, N. D., presented an excellent paper on 'Common Fractures and Dislocation of the Carpal Bone,' and

Dr. P. H. Burton of Fargo, gave a very interesting talk on some of the things observed in orthopedic work in his recent post-graduate work in Boston."

Members of the Upper Mississippi Medical Society met in Long Prairie, Minn., for their October meeting. Seventy-five doctors were present. Following a dinner, Dr. L. W. Barry, Minneapolis, spoke on "Office Gynecology"; Dr. A. E. Flagstad, Minneapolis, spoke on "Common Foot Disorders," and Dr. Royal C. Gray, Minneapolis, spoke on "Poliomyelitis, Early Diagnosis and Treatment."

A meeting of the Watertown District Medical Society was held Tuesday, Oct. 13th, at Watertown, S. D. Following a dinner, a lantern slide lecture on "Fractures of the Upper Extremity" was given by Dr. G. E. Van Demark of Sioux Falls. Guests of the Society were Dr. G. E. Zimmerman of Sioux Falls and Dr. A. E. Bostrom of Waubay, Director of the Division of Epidemiology of the South Dakota State Board of Health. After the program a business meeting was held.

The regular October meeting of the Black Hills District Medical Society was held at the Tourist Park, in Spearfish, S. D. After a fine trout dinner was served, the following program was presented. "Uroselectan in the Diagnosis of Kidney Tumor," by Dr. A. J. Janis; "Role of Surgery in Hydronephrosis, with case report," by Dr. F. W. Minty. Round table discussion of interesting and instructive cases. The Fall meeting of the society will be held at Deadwood, December 3rd, 1931.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month of November will be as follows: November 4th—Fracture of Skull; November 11th—What are the Psychoneuroses?; November 18th—Prevention of Eye Strain; November 25th—Treatment of Leukemia.

The fall meeting of the Nicollet-Le Sueur County, Minn., Medical Association was held at Le Center, Minn., last month. A dinner preceded the evening's program of scientific talks. Dr. Martin Nordland of Minneapolis was the guest speaker and presented an illustrated talk on "Thyroid Surgery." Dr. W. McKechnie, St. Peter, had a paper on "Treatment of Paresis of Malarial Inoculation." Dr. M. C. Peterson, St.

Peter, reported a case of acute destructive inflammation of the head of a caecum. Dr. McKeon spoke on "Conservative Treatment of Epithelioma." Dr. Theodore Holtan, Waterville, reported a case of "Streptococcus Sore Throat." Beside these several others appeared on the program and spoke on various subjects.

Dr. J. A. Myers, Minneapolis, chairman of the editorial board of the Journal-Lancet, has been kept busy during the past few weeks in attending annual meetings and state conventions, where he was among the leading speakers. In September, he attended the meeting of the County of Queens and the Queensboro Tuberculosis Association in New York City, then to the 111th annual meeting of the Michigan State Medical Society at Pontiac, Mich. On October 3rd and 4th, he was at St. Joseph, Mo., when he addressed the Clinical Club, the St. Joseph Medical Society and the Missouri State Tuberculosis Association, October 5th he was the principal speaker at the Red River Valley Society at Thief River Falls, Minn., and October 15th, he was on the program at the annual meeting of the Illinois State Nurses' Association at Chicago.

CLASSIFIED ADVERTISEMENTS

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DIET IN ORTHOPEDIC SURGERY*

BY EMIL S. GEIST, M.D.

MINNEAPOLIS, MINN.

The subject may seem trite. Nevertheless, I have found no paper with a similar title in orthopedic literature. First, we will allude to those orthopedic conditions in which we already have standard knowledge that diet is of importance.

In rickets, for instance, the proper dietary is well known and easily accessible in the literature.

Tuberculosis: During the past few years the salt-free Sauerbrauch-Herrmannsdorfer-Gerson diet has been tried extensively not only in pulmonary tuberculosis, but in tuberculosis of bones and joints. In the latter form of disease, this regime seems to be of some benefit. We have tried it, and so far find no appreciable differences between those patients who get the ordinary diet for tuberculosis patients and those who are following the Sauerbrauch-Herrmannsdorfer-Gerson method.

We will not discuss the many different diets which have been promulgated in the past as treatment for chronic arthritis. These are occasionally protein free, occasionally carbohydrate free, with many variations. All of them are easily accessible in the literature and none of them, up to the present time, has solved that perpetual puzzle, chronic arthritis.

In the cure of the condition known as gout, proper diet is of importance. No further allusion will be made here.

Today we will take up another phase of the subject, namely, that of the reducing diet in orthopedic conditions of the back and lower extremities. It is nine years since we have been paying particular attention to this phase of the practice of orthopedic surgery. Occasionally there is a scanty reference in literature, not at all

*Read before the Jubilee Session of the North and South Dakota State Medical Associations, Aberdeen, South Dakota, June 2-3-4, 1931.

emphasized, that in a certain condition the patient's weight ought to be reduced. Since we began systematically to study this matter, we find that with weight reduction, the patient's symptoms often abate regardless of other forms of treatment.

The problem is a mechanical one. It deals with the relief of excessive stress and strain on damaged weight-bearing bones and joints.

The spine: When we remember that practically the entire contents of the abdominal cavity are attached in some way or another to the spine; that the weight of the pendulous, fat abdominal wall is borne by the spine, and, that the excess weight of the arms, chest, neck, shoulders, and trunk is also carried by the spine, we realize that perhaps it might be well to lessen the load where actual disease or injury affect the weight-bearing column, the spine. For instance, we have found that in backache of various kinds, in lumbo-sacral and sacroiliac strains, in vertebral insufficiency, in spondylolisthesis, in round shoulders, and in postural defects, weight reduction plays an important part in giving the patient comfort. To illustrate, permit me to cite the case of a woman thirty-five years old, suffering considerably with backache as a result of a dorsolumbar scoliosis. Braces had been tried without relief. A spinal fusion was contemplated.

Before resorting to this, we found that the patient was thirty-five pounds overweight. We advised weight-reducing diet, and after the patient had lost thirty pounds, she found that the brace gave her enough support; that her pains had practically disappeared, and that she could attend to her duties as a teacher. This made the operation unnecessary.

It is in diseases of the lower extremities that this adjunct proves most valuable.

The hip: Chronic senile arthritis is usually non-articular and painful. As a result of the lack of exercise, due to the painful hip, the patient has gained considerably in weight. At the time of consultation he is often from twenty to fifty pounds overweight. It has been our experience in many cases that weight reduction alone is sufficient to give the patient considerable relief, the degree of which is sometimes startling. We, of course, add the routine orthopedic measures.

In old, congenital dislocations of the hip, which have not been reduced and in which pain establishes itself at an age of about thirty, or over, we find a patient who limps and who complains of tiredness and pain in the hip and leg. The patient is overweight, due to the fact that she cannot exercise. In this condition we have had cases where contemplated operations became unnecessary because the patient's weight was brought to normal by dieting.

In coxa vara due to old Legg-Perthes' disease (osteochondrotrophopathy) we have made similar observations.

The knee: We find that in senile arthritis, weight reduction itself is occasionally enough to give complete amelioration of symptoms. In cases of this type, we are dealing with patients who are poor operative risks and who have a fairly useful range of mobility, but whose exercise is limited on account of pain which gets worse on use. We find that in removing superfluous weight we are removing just that much stress from the diseased knee, and that, having less weight to carry, the knee acts and feels more nearly normal. As a rule some form of bandage or knee cage or brace is needed in addition. The wearing of a cane helps to give relief.

We find that, unless we pay attention to the patient's overweight, none of the other measures result in much apparent benefit. We have seen patients who claimed they were cured after weight reduction alone. This was not the case. The arthritic process, as shown on the roentgenogram, had not changed. The patient's symptoms were relieved, and that was what interested him most.

I may interject that the realization of the importance of this subject of weight reduction in orthopedic conditions came to me while hunting in North Dakota some nine years ago. I found that the same gun which weighed nine pounds on leaving camp in the morning, somehow or another, seemed to weigh fifty pounds by evening, after a day's tramp in the fields. In actual experience, I find that the heavy patient with a chronic lesion of the lower extremities who is

comfortable in the morning, but who develops discomfort and pain during the day, is the one who is helped most by weight reduction.

A knee condition which sometimes yields to weight reduction and which has been considered operative is the Hoffa Fat knee (*Lipoma arborescens*). This disease is characterized by increase in the amount of intra-articular fat. The symptoms are those of an internal derangement, but are not as well marked. Doubtful locking followed by joint effusion constitute the chief complaints. The patients are handicapped, and the condition is sometimes bilateral.

About fifteen years ago a twenty-five year old girl, the sister of a fellow-practitioner, came to me, suffering from this condition in both knees. She could walk for one or one and one-half hours in the morning. After that her knees were so painful that she was forced to spend the balance of the day in a chair. She was an intelligent person and her life was miserable. The question arose whether we should operate and remove the excessive fatty masses which could easily be detected on both sides of the patella in each knee. Both knee joints were practically filled with hypertrophied fatty tissue. I advised weight reduction by diet, hoping that the adipose masses within the knee joint would perhaps be among the first to be absorbed.

So indeed it proved in this case. After the patient had lost twenty pounds she could walk again all day. She played tennis, and became a normal young woman. I have had like gratifying results with other similar cases since then.

The foot: It is in conditions of the foot and ankle that we use this method of treatment most frequently, especially as an adjunct in the treatment of that very common foot disease—weak foot (flat foot). We now practically refuse to treat a flat-footed patient who is overweight and who does not promise on his honor to follow directions as to a proper reducing diet.

We find that no matter what braces or shoes we prescribe, the results are not satisfactory unless the patient arrives in due course of time at the proper weight for his height and age. In our opinion, men and women who are suffering from foot strain, metatarsalgia, and allied conditions cannot be relieved completely unless they are willing to reduce the overload which they are carrying about.

Many of our most satisfied patients belong in this category, and it seems needless to include a case report which would be typical of very many similar ones.

General diseases: There are general diseases and disabilities affecting the lower extremities in which weight reduction and maintenance of physiological body weight is of importance.

(A) Infantile paralysis: The child who is suffering from more or less paralytic involvement of the legs is liable to be converted from an active child to one who spends most of his life sitting down. Digestion is just as good as ever, and the patient is liable to become heavy. Very often weight reduction is necessary. Here, too, numerous case reports could be cited.

(B) Charcot's Joint: This condition usually occurs in the weight-bearing joints. Is it not reasonable to bring the weight of such a patient somewhere near normal, knowing that in this manner we can protect, in a measure at least, the rapidly disorganizing joint mechanism? Here we lay considerable stress on the necessity of weight reduction.

(C) Fractures: It may be said that heavy people are poor risks in fractures of the lower extremities. Overweight makes the care of the fractured leg more difficult, and may be the cause of a poor result.

I believe it may also be said that in obese patients fracture healing is not inclined to progress as rapidly as it does in patients of normal weight. This is a clinical observation; I believe it is a true one.

In ancient fractures of the thigh and tibia, and especially of the femoral neck and of the ankle, the question of weight reduction is also of great importance.

The average patient with non-union of a fractured femoral neck becomes overweight after having completed the fracture treatment. Many of these cases are on crutches because of pain. Reduction of weight is necessary as a pre-operative measure.

If one contemplates on Albee bonepegging or a Whitman reconstruction, I believe that the patient will do much better if his weight be first reduced to normal. In ancient cases of un-united fracture of the neck of femur a non-operative patient could often bear weight on his hip for one hour or two every day if it were not for the excessive amount of weight he must carry with him. In this type of chronic invalid the results of weight reduction are gratifying to the patient as well as to the physician.

Weight reduction is important in ancient cases of fractured ankle. The ankle joint is a tightly knit piece of mechanism, and slight deviation from normal is liable to cause functional disturbance and disability due to discomfort and pain. The displacement of the fragments is sometimes not enough to warrant a serious surgical procedure in an old healed fracture, but the patient, nevertheless, suffers pain in walking if there is overweight. Reduction of weight will sometimes cause obliteration of the patient's subjective symptoms. Here again numerous case reports might be cited.

In the post-operative treatment of the orthopedic cases it is well, when necessary, to begin to reduce the patient's weight while he is still in bed in order that when he begins to use the affected lower extremity, he need not carry around more weight than nature intended him to do in the first place.

Nothing will be said here regarding the methods of weight reduction. These are well known. When the subject is properly presented to the patient he will quickly see the point and will be anxious to co-operate. There is no object in trying to achieve results when the patient is obstreperous or lazy. When the excess weight is over forty or fifty pounds, I am inclined to have the patient consult an internist. Some patients become overly enthusiastic and want to lose weight too rapidly for their own good. We never expect a patient to lose more than two or three pounds per week. We have not used thyroid extract in obtaining weight reduction.

In conclusion it may be said that:

(a) A chronically painful joint of the lower extremity often ceases to be troublesome in an individual who has been overweight and who, by means of a reducing diet, has brought his weight to normal.

(b) This method in proper cases is an adjunct to other forms of treatment used in orthopedic surgery.

DISCUSSION

DR. P. H. BURTON (Fargo, N. D.): I believe DR. GEIST has had a greater personal experience with overweight and flat feet than anyone else in the United States, and he has done a remarkable job in correcting it. He has had strangers stop him on the street and recommend him to orthopedic men; he has even had them stop him on the street and recommend DR. GEIST.

With overweight, we usually have faulty posture. There is a lordosis and a tilting of the pelvis; these people have knock-knees and flat feet, and they are very uncomfortable. By reducing the weight and changing the posture, you make absolutely new patients out of them, both physically and mentally. The mental change is very remarkable.

I haven't anything in particular to add to Dr. Geist's paper. I think it is very fine of him to bring this to our attention. We have all been reducing the weight of the arthritics, and we should do it with practically any patient who has faulty posture or bad body mechanics or is overweight. If you load up a one-ton truck with two or three tons, you have bad mechanics right away; something starts to squeak and doesn't work right.

I am very glad to have heard Dr. Geist's paper.

SPONTANEOUS MENINGEAL HEMORRHAGE: CASE WITH RECOVERY*

By C. WM. FORSBERG, M. D., and O. V. OPHEIM, M. D.

SIOUX FALLS, SOUTH DAKOTA

When doing a spinal puncture, one ordinarily expects a clear colorless fluid to flow from the needle. Occasionally this fluid is streaked with blood during the first flow. This, however, soon disappears, and clear fluid will come during the rest of the drainage. When a fluid comes out which is blood-tinged and homogeneous, and which persists throughout the drainage, the operator realizes at once that he is draining an unusual spinal fluid.

In the normal spinal fluid the blood which may be received from an injury of a vessel will clot, and the supernatant liquid will be clear. In the hemorrhagic type, the fluid usually does not clot on standing, and if centrifuged, the supernatant fluid will be yellow-tinged, the degree dependent on the amount of blood. Such a finding indicates that there has been a hemorrhage into the cerebrospinal cavity from the meninges of the brain or spinal cord, from the ventricles of the brain, or from a rupture through the cortex of one of the internal vessels of the brain.

There are three types of meningeal hemorrhage. The first is due to trauma of the brain, spinal cord, or membranes; the second, to diseases or anatomical defects; and the third, to cerebral hemorrhage.

Sometimes an additional group is given for the conditions in the newborn: such as dystocia, forceps delivery, and congenital diseases; but it seems advisable to distribute these cases between the first two groups. The different types may then be classified as follows:

1. Traumatic:
 - (a) Birth Injuries: Dystocia or forceps delivery.
 - (b) Accidental: Injury to head or spine.
2. Spontaneous:
 - (a) Congenital Diseases: Syphilis, etc., in the newborn.
 - (b) Acute Infections:
 1. Local: Encephalitis, etc.
 2. General: Influenza, etc.
 - (c) Chronic Infections:
 1. Local: Pachymeningitis hemorrhagica interna.
 2. General: Nephritis, etc.
 - (d) Anatomical Defects: Aneurysms of meningeal vessels.
3. Arteriosclerotic: Cerebral hemorrhage into spinal cavity.

In the arteriosclerotic type there is usually a rupture of one of the blood vessels within the substance of the brain which may be extensive enough or near enough to the cortex to rupture through the brain substance into the cerebrospinal cavity. This type is more likely to occur in elderly patients, although there are a number of cases reported in the fourth decade of life.² Furthermore, the cerebral symptoms of paralysis persist in this type, while in the spontaneous type, any paralysis, if present, is likely to be more transitory.

The diagnosis of spontaneous meningeal hemorrhage is made by the findings at autopsy or by the obtaining of a bloody spinal fluid on puncture. In the latter case, it is necessary to rule out the traumatic type from the history, and the arteriosclerotic type from the symptoms of cerebral hemorrhage, from the age, blood pressure, and other clinical findings.

The clinical symptoms in the typical case varies according to the extent of the hemorrhage. The first symptom in nearly all cases is the onset of a sudden severe headache. If the hemorrhage is extensive, the patient passes into coma and may die in a few hours. If it is less extensive, the headache is accompanied by persistent vomiting, an intensely rigid neck, and no loss of consciousness. Examination discloses a positive Kernig's sign, a sluggish reaction of the pupils to light, and the absence of a choked disk.

The prognosis in the less extensive type is fairly good as to ultimate outcome. According to Goldflam,⁶ nearly all patients living two days make a complete recovery.

The treatment consists of repeated spinal punctures with the use of coagulants. Too much spinal fluid should not be withdrawn at one time, since this might encourage bleeding.

The following case is worthy of recording, not only because the condition is uncommon, but also because the patient had three distinct hemorrhages confirmed by spinal fluid findings during her hospital confinement.

CASE REPORT: A student nurse, aged 22, while attending church services on Christmas Eve, was suddenly seized with a most agonizing pain in the head localized in the left temple. She stated that it felt as though something had struck her

*Abstract of paper presented to the Staff of Sioux Valley Hospital, October 5, 1931.

on the head. She became dizzy, staggered when she tried to walk, but remained conscious. She felt nauseated at first and vomited repeatedly after she arrived home. She noticed a marked rigidity of the neck from the first and felt a numbness all over the body. The headache continued intermittently during the night, but the rigidity of the neck was persistent. A hypodermic of morphine did not relieve her.

Five days later she was still complaining of a severe headache, stiffness of the neck, nausea, restlessness, and diplopia. Examination then revealed a rigid neck and a positive Kernig's sign. The knee jerks were sluggish; babinski and ankle clonus were negative. Sensation was normal throughout. The upper extremities were normal. The pupils were somewhat dilated and reacted sluggishly to light and accommodation. The extraocular cranial nerves were normal. The blood pressure was 110 systolic and 70 diastolic.

For several days the patient improved; but seven days after the primary attack, while sleeping, she was suddenly seized with another attack of severe pain in the head localized again in the left temple. This was followed by nausea, vomiting, and almost complete blindness. Her pain became so severe that she was kept in bed for a while. That same night she went to the hospital. The hemoglobin was 72 per cent Sahli, the erythrocyte count 4,220,000, the leucocyte count 12,200 with 11 lymphocytes, 86 polynuclears, and 2 eosinophiles. A spinal puncture revealed a uniform bloody fluid. The laboratory reported a spinal fluid count of 7,200 erythrocytes and 180 leucocytes. The differential of the white cells in the spinal fluid gave 48 per cent polymorphonuclears and 52 per cent lymphocytes. No organisms were present in smears or cultured specimens. Sugar and globulin were present in small quantities. The blood Wassermann was negative. A spinal puncture the next day by a consultant gave the same results.

On the fourth day in the hospital, the patient was as yet unable to open her left eye. Examination revealed a paralysis of the upper lid, a dilated immobile pupil, and loss of external rotation of the eyeball. There was no evidence of a

choked disk or increase in intracranial pressure.

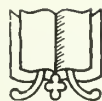
On the ninth day, the patient had a chill followed by a temperature of 103. Up to this time her temperature had remained 99 to 100. After this her temperature continued between 99 and 102 for about 15 days. She was very nauseated, vomited considerably, and took little or no nourishment. The pain in the left temple was severe enough to require one or more hypodermics of morphine daily. The rigidity in the neck remained about the same. She was extremely restless at times, and sedatives controlled her symptoms for a short time only. The pulse was somewhat irregular and slow. At times there was a slight cyanosis.

On the twenty-third day her condition was serious. Upon the advice of a neurological consultant, neutral acriflavin was given intravenously; spinal punctures were done more frequently, and a serum and coagulant were used. She improved during the next two weeks. The spinal fluid showed less blood daily and finally became colorless. At the end of this time (on the thirty-seventh day), the patient experienced another attack of headache and gastric disturbance, but not so severe as on previous occasions. The spinal fluid again showed more blood for a few days. After this she steadily improved and was able to leave the hospital sixty-eight days after her admission. The left ophthalmoplegia, which remained the same during the hospital stay, has since gradually improved; so that now, nine months after the first onset of her illness, this is only a minor defect.

At present she looks well, has no headaches, has practically regained her strength and weight, and is able to do light work.

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THE PROPER CARE OF COMPOUND FRACTURES*

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There are many divergent views as to the proper handling of fractures resulting from accidents incident to our modern machinery and modes of travel.

It has always seemed to the writer that the matter was one purely of "common sense," calling for a combination of fearlessness with a fair knowledge of those things which should not be done, and an understanding of a few well-known procedures which must be carried through. We know that⁴ the treatment of fractures is a sufficiently difficult undertaking even when done the easiest way.

Compound fractures are defined as any loss in continuity of a bone which communicates through the damaged soft parts with the external surface of the body.

In their treatment we are supposed to be as wise as King Solomon, as crafty and versatile as Napoleon, and as steady as the Rock of Gibraltar, tempering our work with the Milk of Human Kindness, and under no circumstance must we get less than 100 per cent results in the eyes of the laity.

Because of industrial insurance laws, the management of the patients' complex has become quite different than that used in abdominal surgery. Every accident is a possible source of claim against the insured, and, because of the compensation paid, has made the surgeon a judge of his own work—a soothsayer to the patient, a referee between the injured one and the insurance company, and a victim of mal-practice suits in which often-times not only lay, but also professional minds are the inciting factor.

GENERAL CONSIDERATIONS

There are two main objects in the treatment of all fractures: (1) a fair anatomical result, and (2) a good functional one. In the treatment of compound fractures we must stress the latter even though the former may be far from that desired. They are both best accomplished⁴ by restoring the injured parts to their normal relationship, as nearly as possible, and maintaining this relationship until healing occurs.

We are prone to think of a compound fracture as occurring only in the extremities, but, while

it is true that the far greater number do arise in the long bones, many of those of the greatest consequence obtain in the skull and face as well as in the bones of the thorax and pelvis, and are far more serious than those of the extremities, often causing severe complications if not immediate loss of life. If the fracture is cared for within a few hours of the accident, the fracture alone is being cared for. If one waits too long, fracture plus complications¹⁰ must be cared for.

Proper treatment must be instituted, then, with a clear understanding of the main principles involved, one or more of which are applicable in all fractures of this type no matter where they are located in the human body.

There are certain complications which meet us at once. In these fractures we are not only dealing with a broken bone but with a wound involving the soft parts. This wound may have been made from without or within and it may be filled with dirt, grease, or pieces of foreign matter such as clothing, material filled with germ-laden dust in the best culture media in the world, a blood clot in a human incubator. Let us always bear in mind that³ a hæmatoma is ideal culture ground for infection.

The attempt, therefore, must be made immediately when the cases present themselves to differentiate between infected and uninfected wounds. Whenever there is the slightest doubt we should treat them as though they were infected. A certain sequence of events in the care and treatment take place in a fracture of any type but more so in compound ones, and we must be alert as to how to control them. We must remember that if blood only escapes from the wound, we are likely to be dealing with an injury only to the soft parts. If, however, fat drops are seen floating in the blood, they come from the bone marrow and, therefore, the fracture is a compound one.

EMERGENCY TREATMENT

The presence of severe shock or hemorrhage calls for general, rather than local, management. Heat, rest, and morphine are the anchors of treatment, with subsequent blood transfusion and saline solutions subcutaneously in large quantities. The emergency care calls for supportive

*Read before the Great Northern Railway Surgeons' Association at Glacier Park, Montana, June 29th, 1931.

treatment, together with careful covering of the parts with clean, if not surgically clean, cloths, and splinting or support applied to facilitate movement of the patient.

The skin surface may be painted with iodine in the region of the wound, but iodine should not enter the wound itself because of the pain which it produces. If the bone is protruding from the wound, it should not be reduced at the emergency dressing. Its reduction is disastrous; rather apply a sterile dressing and splint the part in its displaced position. Loose and comminuted fragments of bone should not be removed unless they are practically outside the wound and separated from all sources of blood supply,⁷ as extensive removal of these fragments is a very frequent cause of non-union.

The best splint for transportation or provisional use when the fracture is of an extremity is the Thomas splint or its modifications. The splint used should first of all be safe; next, it should be simple of application.¹⁰ The patient should not be removed from the ambulatory splint until the state of shock is over. Hospital and good nursing care are essential.

Roentgenograms should always be taken at the earliest possible moment so that the position of the fragments and the type of fracture to be dealt with can be definitely determined. X-ray examinations should be frequent and made as often as deemed necessary, throughout the entire course of treatment—the surgeon and not the patient to be the judge as to frequency.

COMPLICATING INFECTIONS

Tetanus Antitoxin should be given at once in every compound fracture. Its protection in prophylactic doses of 1500 units is almost absolute. It has been shown by clinical and experimental investigations that immunity thus conferred has a limited duration; at the end of two weeks it is slight, and is practically gone at the end of three weeks. For that reason, in badly comminuted wounds, inject four doses, one each week, unless primary healing has been obtained in the meantime.

Tetanus spores may persist in healed wounds for as long as a year. Therefore, when doing secondary operations, we must think of this possibility and give anti-tetanic serum, preceding or accompanying the operation.¹² In order to avoid anaphylaxis when there is a history of asthma, inject a few drops of serum in salt solution intradermally. Wait thirty minutes; then if there is no reaction inject the full dose.

If the case comes into our hands late with developed symptoms of tetanus:

- (1)¹ The wound should be laid wide open and lightly packed with gauze soaked in hydrogen peroxide, changing every hour. This should not be bandaged on.
- (2) Patient should be placed in a dark room; sedatives given, and feeding carried out if necessary through a nasal tube or by rectum.
- (3) Massive doses of antitoxin should then be given around the site of infection, intraspinally and intravenously.
- (4) A one per cent solution of magnesium sulphate injected subcutaneously is favored by many. Its use by us in two cases gave remarkable results. Fifty per cent magnesium sulphate by rectum, or one per cent subdermally, were the strengths used.

Gas infections must be considered. Gas gangrene is caused by the Welch bacillus, an anaerobic bacillus, and when once smelled its odor will never be forgotten. The first stage of its development occurs in the first twelve hours. There are no visible signs, but there is a characteristic odor, and the patient is extremely sick. Specimens of secretion should be taken at once, both for direct examination and culture.

In the second stage gas forms and can be felt in the tissues. As muscular gangrene progresses, the skin becomes tense and white, and the odor becomes nauseating. During the third stage, the general toxæmia becomes marked. The patient is delirious; skin is gray in color; blebs arise on the skin, the pulse disappears in the extremity due to gas pressure, and gangrene of the part becomes more marked.

Treatment: All parts should be laid wide open and infiltrated well with cleansing solution and peroxide solution hourly. It may be necessary to dissect out the muscle involved, or amputate the extremity. The mainstay with us during recent cases has been the gas bacillus antitoxin, 10,000 units intravenously, 10,000 units intramuscularly.

OPERATIVE TREATMENT

With the patient removed to the hospital, the skin should be given more thorough attention. It should be shaved, either dry or moistened with benzine, shaving in a direction away from the wound, the part being held firm while this is being done. After shaving, clean with benzine, removing all perceptible dirt.

The promiscuous use of soap and water should be dispensed with because of danger of wound infection. The skin having been painted with tincture of iodine, and the surface of the wound

slightly swabbed with it, followed by alcohol, we are ready for the anaesthesia.

⁸ Ether is the anaesthetic chosen in these fractures, as the injection of local anaesthesia by infiltration in volume tends to further disseminate the bacteria in the wound. Nerve blocking or spinal anaesthesia may be given by those expert in its use, but for the ordinary man, ether is the best. After giving the anaesthetic, Harrington's solution or tincture of iodine can be used in the wounds, because the tissues so treated will be removed at the debridement to follow.

The aim of debridement is the removal of all soiled and damaged tissues together with the major portion of the infecting organisms. Debridement should mean to us, healthy appearance, bleeding, and contractility. We should not over-do this work;⁴ it is often overdone at the expense of tissues which could well be saved.

The operation is best performed by progressive excision of the walls of the wound, the tissues being cut away until bleeding is encountered. The skin should be removed around the edge of the wound, rather widely; frayed fascia should be excised, and blood clots wiped away. Tendon sheaths, depending on their condition, should either be removed or thoroughly cleansed.

The muscle tissue should be treated with great care as it is a favorite site for gas bacillus infection; therefore, all damaged and soiled tissue must be thoroughly removed.¹² Healthy muscle is recognized by normal color, oozing of drops of blood, and contractile response on stimulation with the forceps. After the cleansing and anatomic rearrangement of the parts and following complete hemostasis in the soft parts only a few sutures should be used and the muscle bellies and fascial plans should not be tightly sutured.

A surgeon should employ only clean instruments and gloves in the wound, and should not traumatize healthy tissue by seizing roughly with forceps. All retractors should be used gently and be of the smooth, non-toothed variety. He should sponge by pressure rather than wipe, and avoid ligation *en masse* so as to cut off as little blood supply as possible, remembering that all deep sutures should not be tied tightly and all knots must be cut short.

⁸ Heroic treatment of the fractured bones is required. It is necessary that complete exposure of the ends of the severed bone should be obtained, but the periosteum should be interfered with as little as possible. Entirely free fragments may be removed, but all those to which periosteum is attached should be preserved. Soiled bones should be removed with Ronquers, and

other portions cleaned with gauze. It is extremely rare for a piece of bone to be entirely separated from all vascular supply by trauma, as it still may be supplied with nutrition by the soft parts.

Reduction of the fracture should be accomplished by angulating the fragments so that the ends are visible, bringing them into apposition and straightening the limb. If the ends of the bone are irregular they will hold themselves easily. When this can be done, and the tissues can be brought together easily, in the absence of infection the case may be treated as a simple fracture, either using plaster of paris splints or traction apparatus of the type best indicated. When using plaster of paris a large window should always be cut out over the wound to facilitate dressings.

When a choice of fixation apparatus is possible, plaster of paris should be abandoned for other forms of traction splints which allow more freedom in the treatment of the wound. Extension being desired, skeletal traction by means of Stinmans pins or ice tongs is usually better than adhesive plaster because of the moisture about the wound, and, if near a joint, the necessary skin for its application may be unavailable. If traction is applied correctly, it maintains alignment without the use of coaptation splints, making access to the wounds easier. It is all-important to begin treatment with the splint and type of traction which is going to give the best alignment and extension until union in the bone has occurred.

Internal fixation by means of plates, bands, nails, etc., have their ardent advocates, and those as strongly opposed to them.

² Boehler says the use of large plates or screws for fixation of the bones is particularly detrimental to healing.

Brown & Brown write that:¹¹ "(1) They believe that temporary internal fixation of compound fractures should be more frequently used than has been done in the past, and that it will prevent many of the difficult reparative operations which have to be done on non-union compound fractures. (2) They do not believe that it increases the incidence of infection, but reduces it in direct ratio to the fixation. (3) They do not believe that bands or plates should ever be used with the understanding or hope that they will remain permanently. (4) That the value of bands and plates in preventing excessive deformity and in relieving pain, between and during dressings, is a very great asset. (5) That their use will occasionally prevent the loss of limb, where displacement is likely to interfere seriously with circula-

tion or nerve function. (6) That the Parham band is much to be preferred to the Lane plate where it can be used, because in oblique and comminuted fractures it is a better mechanical support and brings all the fragments into perfect apposition. (7) That as complete external immobilization by splints should be maintained as would be if internal fixations were not used."

The consensus of opinion and good judgment seems to advise against their use. When necessary they should be temporary only. Nature abhors a foreign object placed in the body or left there too long, whether it be a dead fœtus in the uterus, a spicule of bone left from an osteomyelitis, a sliver in the finger, or a Lane's plate; it should be removed when its purpose has been accomplished, and our best judgment requires it. They should be left in not longer than six weeks when they can easily be removed. It is a well known fact that⁵ any tissue will tolerate a considerable amount of infection in the absence of a foreign body, but with the introduction of a foreign body becomes devitalized and unresisting to infection.

The value of antiseptics is debatable. They do destroy bacteria but at the cost and danger of devitalizing the tissues, and if pressure is applied will disseminate the infection to uninjured tissues. Wound lavage, with little pressure is of value, but when used should never supplant a thorough operation.

Mechanical sterilization should, in selected cases, be followed by chemical debridement, using Carrell Dakin solution through the approved Carrell apparatus, with the tubes leading to every part of the wound and in the correct manner.

In the early Eighties, phenol spray was much in use for compound fractures. The fragments were exposed in the wound and sprayed until they were white and dead—those patients who did not die of phenol poisoning died in a short time as the result of serious infection or septicaemia due to the extreme pressure which surgeons of those days thought essential.

Drainage of the wound is important. If the wound is left wide open, of course it is not necessary, but if closed tightly, or even moderately tightly, a small drain laid in the depths of the wound will relieve the surgeon's mind and help to promote healing to a marked degree by carrying away undesirable secretions. When not used as a means of irrigating the wound, they should, if possible, be removed by the fifth day.

CLOSURE OF WOUNDS

After finishing the debridement and deciding whether to drain or irrigate, the question of clo-

sure of the wound must be considered. It depends on the extent of the injury, the time elapsed, the nature of the accident and how far the operation has rid the field of infection.

Wounds opening into articulations should invariably be closed. Deep and dirty wounds—those which come under treatment only after a delay of twelve hours, and where there is found soiling of the bones at operation, should be left open and tubes for Carrell Dakin solution inserted.⁷ After two weeks of adequate drainage and irrigation, secondary suture is possible in a fair percentage of cases.

When injuries lead into joint cavities, the opening in the capsule should be carefully inspected and the edges incised. If necessary we must open the joint for full access and clean the synovial membrane with sterile cotton pledgets soaked in normal saline solution. All blood clots should then be wiped out and damaged cartilage removed. The complete closure of the capsule is of fundamental importance in the prevention of joint infection.

FOLLOW-UP CARE

The healing of the wound should be followed closely day by day. The temperature and the pulse rate are the indicators of trouble. A slight elevation in temperature may be expected for a few days due to absorption, and, of course, should give no alarm. A sudden elevation of temperature and pulse are evidence of infection, especially if pain is a factor and calls for immediate inspection of the wound, particularly as to any constriction of the part. Wounds healing by first intention or secondary suture need no care other than ordinary dressings. Getting the patient out of bed at the earliest opportunity improves his general nutrition and morale. ⁹Physiotherapy, including the use of radiant heat, massage and diathermy by a trained person are essential.

Under certain circumstances primary amputation is advisable and must be carried out at once when we have:

- (1)⁸ Gross injury to the bone and soft parts with destruction of the main vessels and nerves.
- (2) When we find we are unable to prevent the spread of a virulent infection such as would endanger life. We are justified in taking greater chances with the upper extremity than with the lower—particularly in the case of a young subject because of the inability of fitting artificial appliances to the upper extremity for satisfactory function.

SUMMARY

- (a) One should make an attempt to turn compound fractures into simple ones.
 - (b) Simple but adequate means of holding the fracture should be adopted.
 - (c) The best position we can get after any fracture, and the sooner we get it, is of primary importance in the result.
 - (d) Compound fractures require a constant follow-up; unlike general surgical cases, the operating room phase may be only the prelude to long and tedious post-operative care.¹⁰
 - (e) The surgeon should always treat the patient, not the patient the surgeon.
 - (f) Finally, we should not be messing around compound fractures from day to day, but should follow a definite procedure, make a definite fixation, bide our time with watchful waiting, and let nature do the rest.
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(1) No. 2494—10-9-20. T.L. Age 7. Student.

Past History—Negative.

Present History:

While playing on a manure spreader one of the tines on the cylinder hit him, injuring scalp. He ran to the house where his mother washed his head and removed a piece of soft white substance the size of a large marble. He then was brought to the hospital in a stuporous condition.

Emergency Treatment:

Wound iodized and lightly sutured by Dr. C. J. E.—1500 units Antititanic Serum given. Dressing applied, but skull fracture was not diagnosed. Wound was sutured.

Patient put to bed. Temp. 100°—Pulse 90—Resp. 24.

Operative Treatment:

10-11-20. Two days following admittance.

Stitches removed and fracture in skull located left parietal, occipital region (1½ inches anterior from skin wound). Scalp opened over wound and two pieces of bone from plates of skull removed from 1½ inches in brain tissue. Pieces of straw and dirt found with a large amount of foul-smelling puss. Wound thoroughly cleaned and drained by rubber tube wrapped in iodoform gauze. Wound left open, dressing applied.

Subsequent History:

Temp.—variable 97° axilla to 104°—normal 37th day.

Pulse—variable 70 to 120—normal 37th day.

Resp.—variable 18 to 35—normal 37th day.

R. B. C.—Av. 4,200,000. W. B. C. 32,000. Hg. 75%.

Complained of headache and had dizziness at times.

About six weeks from date of accident brain hernia developed size half hen's egg.

Under gradual pressure this receded closure of skull fracture was accomplished by the periosteum around skull wound being raised and sutured across opening.

Skin sutured and light pressure put on by dressings.

Discharged Hospital, 12-25-20—Healed on two and one-half months after admittance.

When Last Seen:

Bone was entirely healed. No apparent loss in continuity. Boy bright, last three years had epileptic convulsions.

Important Points:

- (1) Type of accident.
- (2) Fracture undiscovered.
- (3) Brain hernia.
- (4) Closure of skull and result.
- (5) Epileptic convulsions.

(2) No. 4859—2-7-31—Age 72—Farmer.

Past History—Negative.

Present History:

While working in the field was caught in belt of tractor. Brought to hospital. Examination and X-Ray plates. Showed compound fracture right side mandible, and fracture lower third right radius and ulna.

Fracture mandible had lacerated tissues of mouth severely, severe bleeding. Teeth were in poor condition and all molars had been lost for several years.

Operation:

Because of loss of teeth impossible to use them for wiring—Dr. B. L. Maertz. Small silver wire inserted through fragments which brought them into apposition. Molded plaster paris around jaw and over head.

Antititanic serum—1500 units given.

Subsequent History:

Large amount of drainage from mouth. Large abscess formed in submaxillary space incised—2-16-31—Dr. F. P. Frisch.

Temp.—Pulse—Resp. remained normal at all times.

Patient discharged hospital 3-14-31. Thirty-seven days in hospital. Arm in splint. Plaster paris splint removed from head and arm seventh week.

Present Status:

Arm normal condition.

Mandible normal condition.

Patient has so far refused to have wire removed.

Important Points:

- (1) Extent of injury.
- (2) No teeth available—wire through bone.
- (3) Abscess under mandible.
- (4) Result—patient does not allow wire to be removed.

(3) No. 1987—11-29-20—A. H.—Laborer

Past History—Always well before.

Present History:

While cutting ties with circular saw, pile of ties tipped and pushed him against saw. Cut extended from middle clavicle across sternum—down to tenth rib, right side.

Examination:

Extreme shock—cut by saw—severing ribs—lung protruding from wound on to sternum under clothes—patient unconscious.

Wound cleaned and ribs brought together with silk worm sutures and muscles sutured with cat gut. Several small drains.

Lung collapsed.

*Case No. 3**Four Months Afterwards On:*

March 31, 1921—Resected tenth rib because of accumulation of puss in lower pleura.

Ribs resected, Mayo Clinic—15 months later because of chronic puss pocket—proteriorly. Was sent there while working in southern part of state.

Marked osteomyelitis sternum drained about two years.

Not subject to coughs at any time.

Important Points:

- (1) Type of injury.
- (2) Lung outside of thorax.
- (3) Dressing and repair.
- (4) Drainage pleura five months afterward.
- (5) Secondary drainage because of chronic pocket formed.
- (6) Osteomyelitis sternum.
- (7) Recovery.

- (4) No. 1650—9-22-29 H.S. Age 37. Farmer.
Past History—Negative except fracture ribs three years ago.

Present History:

Right arm caught in belt on engine of pump—says was twisted around twice. Tourniquet applied by wife above elbow and brought to hospital.

Examinations and X-Ray plates.

Show compound fracture radius and ulna right arm—marked loss of muscle and skin—proximal end of radius almost denuded of tissues and emerging from upper end of wound which extended from wrist to elbow. The whole covered with old rags saturated with blood but apparently these had been clean.

*Case No. 4*

Wound contaminated by grease.

Emergency Procedure:

Given coffee for stimulation—old dressings removed—clean ones applied—X-Rays taken. Tetanus Anti-toxin injected 1500 units.

*Case No. 4**Operative Procedure:*

Wounds thoroughly cleaned with saline and iodine solutions. Bones approximated in good condition and remains of muscles and fascia brought together. Tubes inserted for irrigation and drainage.

- Dressings and splints applied.
- 9-23-29 Considerable pain in arm.
- 9-24-29 Dressing—very bad odor—several blebs on skin—drainage thin bloody fluid—Pt. flushed—Pulse, 100°—Temp., 102°—looks toxic—given 4,500 units antitetanic serum because of slight stiffness of jaws—delirious.
- 9-26-29 to
- 10-28-29 Gradual lowering of temperature and pulse. Wound was thoroughly irrigated with Carrel Dakin Solution and at times Peroxide Solution. Wound thoroughly opened at first gradually closed with good granulation.
- 10-28-29 Ends of bones cut off 1½ inches—small silver wires used to approximate ends. Soft tissues brought together. Ends of wire brought out through wound.
- 11-14-29 Healing nicely. Some exposure of bone at middle of wound.
- 11-14-29 Wound cleaned and edges skin undermined. Two lateral incisions made to pull skin over wound easier.



Case No. 4

- 11-14-29 to
- 12- 2-29 Gradual improvement—slight discharge around wires.
- 3-10-31 Wires removed under ether. Bones of arm healed and rigid.

Important Points:

- (1) Injury—extent.
- (2) Antitetanic serum—with tetanus symptoms.
- (3) Gas bacillis—light infection—Carrel Dakin Solution.
- (4) Cutting off of bones—shortening of arm 1½ inch.
- (5) Fusion of bones.
- (6) Result.

- (5) No. 462—5-5-31. O.I. Age 43. Married.

Past History—Negative.

Present History:

While starting tractor, sleeve on jacket caught in tractor, tearing arm. Towels were laid on and in wound. Referred to hospital by Dr. Solsem, Sacred Heart, Minnesota.

Present Condition:

Arm wrapped in dirty clothes—blood dripping from wound left arm. Underwear driven into wound. Approximal end ulna protruding through skin—fracture of nasal septum—X-ray shows frac-

ture both radius and ulna.

Treatment:

1500 units Antitetanic serum given.

Under ether anesthesia, wound was debrided and cleaned of dirt.

Bones—ulna brought together with small silver wire.

Radius came together without tension.

Carrel Dakin tubes inserted.

Muscles and fascia brought together lightly. Skin sutured.

Dressings applied—Nasal—bones replaced and tamponed. 11:30 P. M.—circulation good in hand.

- 5- 7-31 10 A. M. Dressing changed—foul odor—Temp., 102°—Pulse, 140—Resp., 25—Feeling gas in wound. Muscle looked gelatinous. Wound opened widely—Merthiolate solution used—Irrigation with H₂O₂ every hour.

3 P. M.—10,000 units gas gangrene antitoxin intravenously P.D. & Co.

- 5- 8-31 Swelling less—odor less—no gas in wound—comfortable—dressing changed—10,000 units gas gangrene Antitoxin intramuscularly.

- 5- 9-31

to

- 5-28-31 Temp., 100—Pulse, 100—Resp., 20 to normal 8th day. Swelling became less and less—drainage gradually subsided—circulation was practically gone in hand.

- 5-28-31 Operation ether—Arm inspected. Antitetanic serum 1500 given. Distal ends of both bones necrosed and loosened in their planes. Amputation done—good stump—skin graft necessary.

Important Points:

- (1) Injury.
 - (2) Gas bacillis infection. Gas Bacillis Antitoxin used.
 - (3) Condition of bones and circulation.
 - (4) Amputation.
- (6) No. 1938—2-24-22. H.D. Age 27. Fireman.

Past History—Negative.

Present History:

Head-on collision. Right arm caught in wreck of cab. Nearly severed—cut from middle part of arm at radius posteriorly to base of thumb anteriorly, around ulna. Flexor and extensor cords fingers severed.

Fracture compound comminuted fracture radius and ulna middle lower third.

Operation—2-24-22.

Many small pieces of bone removed. Ligaments reunited.

Drainage by tubes. Dressings applied.

Hospital until April 27th—Two months, three days—Wrist joint and fingers stiff and immovable.

Heat—light—massage—for several months—with rubber bands to exercise.

At work year after accident.

Has about 5 per cent disability.

Important Points:

- (1) Extent of accident.
- (3) Cords and ligaments reunited.
- (3) Length of disability and treatment.
- (4) Result.

RESPIRATORY INFECTION AMONG UNIVERSITY STUDENTS*

BY MARJORIE WULFF AND J. A. MYERS, M. D.

MINNEAPOLIS, MINN.

In previous papers some of the work of the first eight years of the special Chest Clinic in the Students' Health Service of the University of Minnesota was reported. During that time 1,550 students were examined. The present report includes 398 students who were examined from September 1928 to September 1930. These students came to our clinic from the same sources as those previously reported. The co-operation of physicians in the various departments of the Students Health Service has been excellent.

We have tabulated in Table I the respiratory conditions which these students gave as a part of their past histories.

TABLE I

Influenza	250
Bronchitis	120
Pleurisy	76
Pneumonia	71
Tuberculosis	34
Asthma	20
Empyema	1
Gassed	1

Of the 398 students examined, fifty-seven gave histories of known exposure to tuberculosis. Eleven of these lived with members of their own family who had active tuberculosis.

As in previous studies made, influenza, bronchitis, pleurisy and pneumonia take higher places than tuberculosis.

Table II indicates the frequency of complaints as reported by the students.

TABLE II

Cough	208
Expectoration	195
Chest pains	139
Loss of weight	65
Malaise	134
Dyspnea	77
Night sweats	21
Hemorrhage	19
Hoarseness	115
Bloody streaked sputum	29
Nasal Catarrh	2
Indigestion	1

Each student is given a physical examination, and x-ray films are requested in every case. The intracutaneous tuberculin test was given beginning with 0.1 mg. of Koch's Old Tuberculin, and for all negative to this dose 1 mg. was applied. Laboratory examinations were made when indicated. When all the evidence was compiled, diagnoses indicated in Table III were recorded.

TABLE III

Negative	185
Pulmonary tuberculosis	67
Chronic fibrous pleurisy	51
Childhood tuberculosis	43
Diagnosis undetermined	40
Bronchitis	21
Bronchial asthma	2
Spontaneous pneumothorax	2
Pleurisy with effusion	1
Tuberculosis of spine	1
Tuberculous cervical nodes	1
Tuberculous pleurisy with effusion	1
Hay fever	1
Chronic lung fibrosis	1
Pneumonia	1
Pneumonia followed by pulmonary abscess	1
Unresolved pneumonia	1

From this table one observes that those with no abnormal findings are far in the lead. Pulmonary tuberculosis was detected in sixty-seven cases. Of these sixty-seven students, twenty gave histories of massive exposure to the disease. Chronic fibrous pleurisy was diagnosed in fifty-one cases. We have no way of determining which of these cases of fibrous pleurisy had been caused by tuberculosis.

The childhood type of tuberculosis was seen in forty-three cases. This type was not reported in previous groups, largely because it was not considered of much significance until recently.

In May, 1929, the American Sanatorium Association gave the childhood type of tuberculosis a very definite place in the classification of tuberculosis. It is the first infection type which frequently results in calcification of the site of the primary focus in the lung parenchyma and in the regional lymph nodes. In some of our cases both the childhood and adult types were in evidence.

*From the Students' Health Service of the University of Minnesota.

*This paper was prepared with the aid of a grant from the Research Fund of the University of Minnesota.

*Presented in part before the National Conference on College Hygiene at Syracuse, New York, on May 7, 1931.

The incidence of pulmonary tuberculosis is higher in this group than in those of the first eight years of the clinic's existence. We are inclined to believe this is due to the fact that the tuberculin test is applied routinely to all students applying for examination in the Health Service and that the physicians in the various departments have had their attention called to the insidiousness of tuberculosis so many times that they now refer patients with very minor symptoms for special chest examinations, whereas in the past they referred only those with more marked symptoms. Again, we make x-ray film examinations routinely.

The student who fails or refuses to have x-ray films can not have a definite statement concerning his chest condition. Not infrequently, through the x-ray film examination, we have found pulmonary tuberculosis in students with normal physical signs. Therefore, we question whether we would be justified in concluding that there is any more tuberculosis on the campus than there was ten years ago.

We are inclined to believe that it is our better diagnostic procedures and the routine use of them, as well as the educational work among the

students that is bringing to light more cases. Concentration on the cases who gave history of intimate and prolonged contact exposure is probably also playing a part.

An ideal procedure discussed in a previous paper has recently been adopted in two schools of the University of Minnesota. It consists of applying intracutaneous tuberculin tests to all the students in the School of Nursing and the School of Medicine on admission. X-ray films are also made of each chest regardless of tuberculin reaction. Re-examinations are made each year of those who have no symptoms, and may be made oftener for those who complain of any symptoms.

The re-examination consists of tuberculin test applied to all who are negative on previous examinations, and x-ray films. A procedure that is nearly ideal consists of applying tuberculin tests, and x-raying only the positive reactors. The occasional case will be overlooked by this procedure. Inasmuch as the number of positive reactors is a good deal less than half of the girls and boys of college age in parts of the country, the expense is greatly reduced by omitting the x-ray examination in all the negative cases.

This is the fifteenth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

By LEO G. RIGLER, M.D.

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DISEASES OF THE DUODENUM AND SMALL INTESTINE

(Continued from Nov. 1 issue)

A. Duodenal Changes From Extrinsic Causes

1. Gall bladder disease may produce:
 - a. Pressure on the bulb—the significance of this is doubtful and pressure may be caused by a low or enlarged liver. This manifests itself by a smooth deformity usually on the upper surface, flattening the bulb out.
 - b. Narrowing of the second portion of the duodenum.
 - c. Adhesions deforming the bulb, pulling it upward toward the inferior surface of the liver, deforming the second portion. These deformities are inconstant.
 - d. Irritability of the bulb which empties itself

very rapidly. This may occur from other extrinsic causes and may also be associated with duodenal and gastric ulcer.

2. Dilation of the bulb occurs from:

- a. Wide open pylorus as in achylia, gastric carcinoma.
- b. Obstruction below it in second or third portion of the duodenum.

B. Duodenal Ulcer

This practically always occurs in the bulb and gives:

1. Direct signs.

- a. The niche which is pathognomonic and the most important sign. It is more difficult to demonstrate than in the stomach but may be shown if careful technique is used. It appears usually as a small area

of increased density with the folds of mucous membrane as lines of decreased density radiating from it. It is usually central but may be demonstrated as a protrusion from the contours in the oblique positions. The presence of a niche indicates activity of the ulcer.

- b. The constant deformity of the bulb of characteristic types:
 - (1) The "clover-leaf" appearance with four recesses of density and four bands of decreased density between.
 - (2) The "B" shaped bulb.
 - (3) The "strawberry" appearing bulb.
 - (4) The "coral" shaped bulb.

These appearances are variable from patient to patient but constant in each case. It is probable that the deformity is due to spasm, scar formation, and swelling of the folds of mucous membrane. The deformity may be due to an incisura on the side opposite the ulcer.

The constancy of the deformity is very important. These deformities will not disappear with atropine. They may, however, remain to some extent after the ulcer has become quiescent or healed.

Variation in the density of the bulb, which should be quite homogeneous, may indicate deformity of the posterior wall.

- c. Eccentricity of the pylorus.
This often goes with the deformities, the pylorus being usually nearer the lesser than the greater curvature of the bulb.
2. *Indirect signs.*
 - a. Pyloric spasm.
 - b. Gastric retention—duodenal ulcer is the most common cause of gastric retention.
 - c. Hypermotility, both the stomach and bulb emptying more rapidly than normal.
 - d. Hyperperistalsis due to irritation of the stomach.
 - e. Dilatation of the antrum of the stomach.
These are secondary signs and when present indicate activity in the ulcer.

3. *Perforated ulcer* may give an *accessory pocket* just as in the stomach.

4. *Value of x-ray examination.*

The roentgen method is the best means of determining definitely the presence of a duodenal ulcer. While perhaps ten per cent of the diagnoses thus made may be wrong, in competent hands the accuracy will be far superior to that of any other method. This accuracy is true of both the positive and negative diagnoses.

C. *Pathological Changes in the Remainder of the Small Intestine*

1. *Obstruction of partial degree.*

This occurs occasionally especially at the duodeno-jejunal juncture from adhesions or pressure of extrinsic masses or kinking and gives:

- a. Dilatation above it.
- b. Loss of the normal folds so that a more homogeneous appearance results.
- c. Reversed peristalsis with passage of the meal backward into the bulb.
This may occur without any obvious obstruction, however, and is not uncommon in asthenic individuals.

2. *Complete Obstruction.*

- a. This may be clearly made out and located exactly on barium meal examination by the marked dilatation of the small intestine above the obstruction and the stoppage of the barium at the point of obstruction.
- b. Obstructions can be diagnosed without the barium meal. The gas filled bowel tends to arrange itself in transversely placed loops which lie parallel to each other and show tremendous distention. The presence of gas in the small intestine in adults usually indicates obstruction or ileus. Examination in the upright position will usually demonstrate multiple fluid levels also.

3. *Tumors.*

Polypi or fibromata rarely occur and give the same findings as in the stomach.

4. *Diverticula.*

These are common especially in the region of the ampulla of Vater and give:

- a. Small rounded or oval pouches project out from the lumen of the bowel.
- b. They may retain barium long after the bowel has emptied itself.
- c. Spasm may occur in the bowel near them.
- d. They must not be mistaken for accessory pockets from perforated gastric or duodenal ulcers.
- e. Very small dilatations of the ampulla of Vater may occur giving an extra fleck of barium at this point.
- f. Diagnosis is best made by repeated examination two, four and six hours after the barium meal, when the pouches filled with barium may be seen, the bowel itself being empty.

- g. They are moveable but tend to retain their form on manipulation.
5. *The position of the small intestine* is important as extrinsic masses may displace the barium filled bowel in one part of the abdomen so that the presence and localization of tumors can thus be diagnosed.
 6. *Value of x-ray examination of small intestine.* The demonstration of complete or partial obstruction of the intestine is a very important feature of roentgen diagnosis. An early diagnosis without the use of barium can frequently be made and in every case suspected of obstruction, x-ray examination in prone and upright positions should be made. The roentgen demonstration of diverticula is the only real method by which they can be detected.
- D. *Secondary Effects Upon the Stomach and Small Intestine.*
1. *Enlarged spleen.*
Displaces stomach to left and produces smooth pressure defect on greater curvature.
 2. *Paucratic cyst, tumor or pancreatitis.*
 - a. Upward and anterior displacement of stomach.
 - b. Pressure defect on greater curvature and posterior wall of stomach.
 - c. Downward displacement of duodenum.
 - d. Lesions of the head of pancreas tending to cause the curve between the duodenal bulb and the second portion to be opened up wide.
 3. *Liver enlargements.*
 - a. Displace the stomach and bulb to left downward, and posteriorly.
 - b. Cause pressure defect on upper surface of bulb and on lesser curvature of stomach.
 4. *Omental cysts and enlargements.*
 - a. Displace stomach downward and posteriorly.
 - b. Cause pressure defect on lesser curvature.
 - c. Displace the small bowel away from the tumor.
 5. *Adhesions.*
 - a. These may produce irregular distribution of the barium in the small bowel in the abdomen with a tendency to remain in a fixed position.
 - b. Ileo-caecal adhesions are most clearly seen. The ileum should come up to the ileo-caecal valve from the pelvis but may be pulled up high to the hepatic flexure, may be adherent to the caecum and not be separable on manipulation, or may be coiled up about the base of the caecum.
 6. *Value of x-ray examination.*
Much valuable information can be obtained as to the nature and exact location of obscure abdominal masses by the roentgen examination of the gastro-intestinal tract.
- E. *Diseases of the Appendix.*
- In general the x-ray diagnosis of appendicitis is unsatisfactory and unreliable. In certain cases, however, information of much value can be obtained but these are uncommon.
1. *Filling the appendix.*
The visualization of the appendix depends upon the filling of it with the barium. This is best accomplished by giving the meal and examining at intervals from 6 to 18 hours after. Failure to fill is common and success in filling depends upon so many variable factors that neither filling or non-filling of the appendix is any indication of its character. Occasionally it may be visualized by means of the barium enema but this is uncommon.
 2. *Normal appearance.*
This shows marked variations. The important findings are:
 - a. A long, thin, irregular density.
 - b. Projecting from the base of the caecum downward and inward.
 - c. Fairly moveable on manipulation.
 - d. Frequently curved into many forms.
 - e. Usually empty within 24 hours.
 3. *Pathological signs.*
 - a. Stasis—failure to empty within 24 hours after the emptying of the caecum.
 - b. Distinct immobility on manipulation usually indicates adhesions.
 - c. Tenderness of marked degree over it. This is an important sign as not infrequently the appendix is found far removed from the actual point of tenderness indicating that it has no relationship to it.
 - d. Abnormal form. A very thick shadow, one that is extremely narrow at the base and broad at the tip, or is markedly kinked, all may indicate some abnormality. Segmentation of the shadows indicates the presence of fecoliths but its pathological significance is very questionable.
 - e. Abnormal position with fixation. A retro-caecally placed appendix usually is pathological. The tip may be demonstrated as low in the pelvis or high in the

abdomen and fixed in this position. This may indicate abnormality.

- f. Stasis in the caecum is of very questionable significance.

THE COLON

A. Normal Findings

1. *Size.*

This is variable. Differences exist between the various parts, the rectal ampulla, caecum, and ascending colon having the largest caliber, the descending and sigmoid the smallest. The size of the colon is greater with the enema than with the meal.

2. *Shape.*

The rectal ampulla dilates into a pear-shaped mass with the giving of the enema. The remainder of the colon takes on the form of a long, narrow tube, except for the caecum which has a more pouch-like character.

3. *Position.*

This varies a great deal with the type of individual, the mental state and the position of the patient.

- a. In asthenic types the caecum tends to be low in the pelvis, the transverse colon hangs low in the pelvis, and the arms of the flexures are completely superimposed upon each other.
- b. In hypersthenics the transverse colon lies high, the flexures may be wide open.
- c. In depressed mental states the transverse colon may tend to lie very low.

4. *Mobility.*

The normal transverse colon can usually be displaced upward somewhat on manipulation and all parts of the colon except the rectum can usually be moved somewhat.

5. *Motility.*

In the course of a barium meal, the head of the meal should be in the ascending colon at 6 hours and filling the caecum. At 8 hours the ileum should be empty. At 12 hours the head of the meal should be in the transverse colon, at 18 hours in the descending colon and at 24 hours in the rectum. At 48 hours it is usually almost completely evacuated.

6. *Movements.*

These are usually not observed on x-ray examination because they are so slow but long examination may reveal:

- a. Haustral churning.
- b. Anti-peristaltic movements.
- c. Pendulum movements.
- d. Rapid mass movements. These are usually best seen and consist of a sudden propulsion forward of a segment of the

contents of the colon for a distance of 5 to 10 cm.

7. *Haustrations or haustral markings.*

These are constrictions of the lumen of the colon at regular intervals and showing best usually in the transverse colon. They may disappear momentarily but will reappear in the normal colon if the observation is continued. They are comparatively shallow in the sigmoid, and caecum, and not seen in the rectum.

8. *Special considerations.*

- a. The sigmoid flexure may be very long and may rise well out of the pelvis. Its loops are superimposed upon the rectum and upon each other and the patient must be rotated to visualize them all.
- b. A slight delay occurs with a narrowing, at the passage of the descending colon over the brim of the true pelvis due to pressure.
- c. The patient must be rotated to separate the arms of the splenic and hepatic flexures, which may be superimposed.
- d. Pressure of the spleen upon the splenic flexure can often be seen.
- e. The caecum may appear to be in close relationship to the sigmoid but rotation will reveal it to be anterior.
- f. The ileo-caecal valve usually will permit the passage of the enema into the ileum if it is not too thick a mixture and pressure is applied. In some normal cases it will not open. Too rapid and too wide opening may be abnormal.
- g. After evacuation the position and appearance of the colon may change radically. The lumen of the evacuated portion may contain a small amount of barium giving it a narrow irregular appearance.

9. *Appearance after the meal in contrast to the enema.*

The colon is not visualized as a whole so satisfactorily after the meal as after the enema. It may be markedly segmented. The distribution is very irregular, the contours are not smooth, and many portions may not be filled.

B. General Considerations of Pathology

1. *Changes in size.*

- a. Increased in:
 - (1) Hirschsprung's disease.
 - (2) Megacolon.
 - (3) Obstruction from adhesions or tumors.

- b. Decreased in:
 - (1) Carcinoma.
 - (2) Colitis.
 - (3) Tuberculosis.
 - (4) Spastic constipation.
 2. *Changes in position* occur from:
 - a. Adhesions.
 - b. Pressure from extra-colonic masses.
 3. *Changes in outline* occur from:
 - a. Adhesions.
 - b. Spasm.
 - c. Carcinoma.
 - d. Tuberculosis.
 - e. Colitis.
 - f. Diverticula.
 4. *Changes in motility.*
 - a. Increased:
 - (1) Achylia.
 - (2) Gastro-enterostomy.
 - (3) Fistula.
 - (4) Cathartics.
 - (5) Tuberculosis.
 - (6) Colitis.
 - (7) Rarely carcinoma of caecum.
 - b. Decreased:
 - (1) Spastic constipation.
 - (2) Atonicity.
 - (3) Rectal spasm.
 - (4) Adhesions.
 - (5) Carcinoma.
 - (6) Pressure from without.
 - (7) Rarely infiltrative tuberculosis.
- C. Anomalies of the Colon*
1. *Malpositions of the caecum.*
 - a. Inversion. The base of the caecum may be directed upward bringing the appendix into the region of the gall bladder.
 - b. Left sided position. The caecum may lie parallel to the transverse colon or may extend well over to the left to lie close to the descending colon. The demonstration of these abnormalities may make the diagnosis of left-sided appendicitis positive.
 2. *Caecum mobile.* An abnormal mobility of the caecum occasionally occurs so that it can be displaced on manipulation to all quadrants of the abdomen. Numerous other anomalies of little importance may be present.
- D. Miscellaneous and Functional Conditions*
1. *Spasticity of the colon.*
 - a. Increased depth and frequency of the haustrations.
 - b. Marked segmentation of the barium meal.
 2. *Atonic colon.*
 - a. Low position.
 - b. Large masses of barium indicating fecal retention.
 - c. Failure to empty within 48 hours.
 3. *Redundancy of colon.*
 - a. Colon much longer than normal.
 - b. Numerous extra loops especially in the distal portion.
 - c. Very slow emptying.
 - d. Atonicity usually an accompaniment.
 4. *Megacolon.*
Indicates merely a very great increase in caliber usually secondary to prolonged rectal spasm or obstruction low down from any cause. The colon becomes redundant, the loops ascend very high. It usually affects only the rectum and sigmoid flexure.
 5. *Hirschsprung's disease.*
The colon is enormously dilated, requires 3 to 4 times the usual amount to fill, and contains large amounts of fecal matter and fluid which produces a bizarre picture when mixed with the barium enema. The loops of colon can often not be separated from each other. Most of the dilatation is in the distal third of the colon.
 6. *Value of x-ray examination.*
Although the roentgen findings are helpful in arriving at a diagnosis, the clinical findings are of greater importance.

(To be Continued)



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ANAEMIA PROGRESS

It is difficult to say whether greater progress in the knowledge of anaemia has been made along the lines of diagnosis or treatment because each has been so dependent upon the other they have advanced, for the most part, hand in hand. As the result of recent findings, it has been learned, too, that primary and secondary can no longer be considered a satisfactory classification. So this concept must be revised.

Experiments with liver and pig's stomach feeding would indicate that these are not only of therapeutic, but also of diagnostic value. Pernicious anaemia cannot be diagnosed simply because it responds to liver, because other forms do also; in fact failure of response is of greater value for classification purposes. Achlorhydria does not seem to be the factor in treatment or cure formerly believed; neither does liver cause its return, nor does hydrochloric acid effect the blood picture. The white picture is important in pernicious anaemia because the count is usually below and rarely up to 5,000.

The hardest group to diagnose is the pernicious, and the hardest to treat is the toxic. The latter group does not respond well, and this is usually due to the difficulty of finding the cause of the toxicity, which naturally must be eliminated. The group with low hemoglobin and normal, or high blood count, so common in women, is the easiest to diagnose and treat. They regenerate well when treated, whereas, without such treatment, the symptoms of lassitude continue indefinitely.

This must be borne in mind; if the diagnosis is not correct one cannot judge the merits of any form of treatment; furthermore, liver feeding changes the picture so that any later diagnosis based upon it may be wrong. Preliminary diagnosis and proper grouping cannot too urgently be stressed, while further developments are eagerly awaited.

A. E. H.

ROENTGENOLOGY—AN ANNIVERSARY

The recent death of Guido Holzknecht of Vienna, another of the long line of medical men who have sacrificed their lives in the advancement of radiology, brings to mind the thirty-sixth anniversary of the discovery, by Wilhelm Conrad Roentgen on November 8, 1895, of the ray which bears his name.

The various reactions of the medical profession to new discoveries in the field of medical science are well illustrated by the response to Roentgen's announcement of his experiments with a new kind of ray. Although his first paper was not presented until December 27, 1895, roentgenograms of the extremities were already being made in the United States as early as February of 1896. By September of that year the famous plate of Lord Lister's hand had been produced, and toward the end of 1896 enthusiasts were already attempting to treat tuberculous glands and skin diseases with this new radiation. Nevertheless, most of the enthusiasm for this discovery was exhibited by physicists, photographers, and a small group of medical men. While this rapid adaptation of Roentgen's discovery to medical problems is rather amazing, the subsequent history of the

medical application of the X-ray is more in keeping with the natural conservatism of the profession. It took a number of years of experimentation and improvement of apparatus before clinicians were willing to use this method of diagnosis and treatment.

In the thirty-six years which have elapsed since that time, the knowledge gained through the use of radiation has had a profound and incalculable effect upon all scientific thought and has vastly modified medical practice. In a recent article Case effectively contrasts the two small references to X-rays found in the entire 1905 edition of Osler's "Practice of Medicine" to our present dependence upon this method of diagnosis and treatment. There is hardly a major disease, the study of which has not been influenced by Roentgen's discovery. There is hardly an individual who does not, sooner or later, undergo an X-ray examination for the diagnosis of some ailment. The medical literature of the present time is replete with references to Roentgen diagnosis or treatment.

While rapid strides have been made in the use of Roentgen rays, the full utilization of this powerful weapon for diagnosis and treatment has not by any means been achieved. Much remains to be learned about the diagnosis of the diseases which afflict humanity; much remains to be accomplished in the treatment of disease. In the achievement of these ends the X-ray will continue to play an important part.

LEO G. RIGLER, M. D.

THE TREND OF MEDICINE

The past twenty years has seen a tremendous change in medical practice. This change is due fundamentally to the fact that during this period of time there has been a steady rise in the amount of training given to the medical student before he goes into practice. The average graduate of twenty years ago, was in most cases, not trained sufficiently to do any but the most minor surgery, and in turn, if he located in a smaller community, there was no hospital where he could do what he was capable of doing. It might also be as truthfully said that he was not trained sufficiently "to do much medicine," but in this field nature heals many. At least, the patient was not visibly made worse and so the bad results were not so apparent as where surgical procedure was attempted unsuccessfully. The result was that while most

medical cases were treated at home, the surgical cases were sent to the larger medical centers. In many cases the city surgeon or specialist relied almost entirely upon his out of town patients for his practice. However, with the lengthening of the medical course, and with a greater number of graduates serving internships and residencies, more men went into practice, able and desiring to do surgical work. Obviously, not all could or cared to locate in urban centers. We then had the development of the small town hospital, which is amply able to care for any but the most technical surgical work. Minnesota has been one of the leaders in this movement, but other more backward states are fast following her lead. There is no question but that in a comparatively few years all sections of the country will be well filled with hospitals, and most medical and surgical cases will be cared for in the immediate vicinity of the person's home.

After all, this is as it should be. Economics are a factor in medicine, as they are in business. It is an economic waste for a patient to travel several hundred miles to have an operation done which can be done just as well at home. Assuming that the operative fee and hospital bill are the same, there is still the expense of travel, and frequently the expense of some relative whom the patient wishes to go with him. In addition to this, there is often a hotel expense incident to convalescence away from home.

It is obvious with improved medical training and hospital facilities in smaller towns, that fewer and fewer persons will travel long distances to secure medical or surgical care. In the future, city specialists or clinics will have steadily dwindling numbers of ailing persons from a distance. The group which does come will be composed of a few persons in each community who feel that better medical care may be found elsewhere, the relatively few patients who require some unusual medical or surgical attention which cannot be given in their home community, and the inoperables and incurables whom the home doctor is glad to have go elsewhere for substantiation of his diagnosis. The net result will be better hospitals and better medical service in the smaller communities and a drift of medical men away from the cities, where there is an over supply of doctors, to these smaller communities which offer a greater opportunity and where, in many cases, there is a dearth of physicians.

DR. GEORGE ROGER ALBERTSON



Dr. Albertson was born December 24, 1886, at Moline, Ill. Married Maisie Kracke, and to this union was born one daughter, Mary Snell Albertson. Received his B. A. at the University of South Dakota. M. D. degree at the University of Iowa Medical School, 1910, and his M. S. degree in Iowa, 1912. Licensed to practice medicine in Iowa, 1910, in South Dakota, 1927. Formerly resided at Iowa City, Iowa, from July, 1910, to July, 1912. Post-graduate work at the University of Chicago Summer Session, 1917. Positions held: Assistant Demonstrator of Anatomy, Iowa Medical School, 1910-12. Professor of Anatomy, South Dakota Medical School, 1912. Elected Dean of the School of Medicine at the University of South Dakota in 1926. Served on the Medical Advisory Board, World War, President of the Yankton District Medical Society, 1930. Fellow of the South Dakota State Medical Association, and a member of the Board of Editors of the Journal-Lancet.

Dr. Albertson died November 3rd, 1931, of Angina Pectoris, while in attendance at a Shrine ceremonial in Sioux Falls.

In the passing of Dr. Albertson, the Medical School have lost a loyal supporter for a high type of medical education for South Dakota.

The State Medical Association has lost an outstanding member of the House of Delegates.

J. F. D. C.

DR. JOHN D. SIMPSON

Dr. John D. Simpson, 73, died at his home in Minneapolis, Sunday, October 18th, after an illness of two weeks. He was born in Waupun, Wis., was a graduate of Ripon College, Ripon,

Wisconsin, and received his M. D. degree from the Northwestern University Medical School, Chicago, in 1882. After practicing general medicine at Henderson, Minn., for ten years, he did post-graduate work in New York, London and Berlin and came to Minneapolis in 1894 where he practiced his chosen specialty of nose, throat, eye and ear until the time of his death. He was a member of the Phi Rho Sigma fraternity, the County, State and American Medical Associations, a former president of the Hennepin County Medical Society and at one time member of the faculty of the Minneapolis College of Physicians and Surgeons of Hamline University. He was capable, kind and friendly. He was held in high esteem by his colleagues. His advice was sought by students in whom he seemed to take a special interest. He had the confidence of all those to whom he ministered. It was especially charming to hear such expressions from his early friends at Henderson.

A. E. H.

DR. W. H. ROBILLIARD

The news of the death of Dr. W. H. Robilliard came as a great shock to the citizens of Faribault, as well as the entire state, and especially to his medical associates. He had been ill only a few days and it was thought that his condition was not serious.

Dr. Robilliard was for thirty-five years a prominent physician in Faribault, a leader in the civic and fraternal life of the community. He was an officer of the Rice County Medical Association, an honorary member of the American Medical Association, physician for the State School for the Deaf in this city, and president of the staff of St. Lucas hospital.

Dr. Robilliard delighted in aiding young men and there are many who in hours of discouragement received from him the inspirational courage needed to bring them success. He had the fraternal spirit and in lodge or civic organization he was active and efficient.

He was a member of the Faribault Board of Education for ten years. The present high school building was erected during his administration. Identified with all of the Faribault Masonic bodies, Dr. Robilliard was actively interested in the work of these organizations here. He was a past master of Faribault Lodge No. 9, A. F. & A. M., and past commander of Faribault Commandery, Knights Templar. In this capacity he led the Faribault Commandery to Chicago in 1910. He was High Priest of Tyrian Chapter, Royal Arch Masons, and belonged to the Scottish Rite and the Shrine.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of October 14, 1931

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 14, 1931. After the dinner at 7 p. m., the meeting was called to order at 8:15 p. m. by the President, DR. J. S. GILFILLAN.

There were forty-five members and two visitors present.

Minutes of the May meeting were read and approved.

DR. MOSES BARRON who was announced to read his thesis at this meeting was unable to be present. So arrangements had been made to have DR. MAX HOFFMAN, St. Paul, read his thesis entitled "Observations in the Diagnosis of Gallbladder Disease."

ABSTRACT

A study was made of 155 cases that were operated upon because the evidence pointed to gallbladder disease. The specimen removed at operation was examined for pathology. An attempt was made to determine the accuracy of the diagnosis, and the relative importance of the various diagnostic procedures.

Securing a careful history was thought to be the most important single diagnostic procedure. Many patients have freedom of symptoms that last for many years, and the early pains are often forgotten. Pain is the most important symptom. Most often the pain was located in the upper abdomen. (Two-thirds of the cases.) In five cases the pain was in the lower right abdomen. A very important characteristic of gallbladder pain is that it often occurs at night and awakens the patient.

The dyspepsia of gallbladder disease does not present any features that distinguish it from the digestive disturbances that occur in other conditions. It may be suggestive of cholecystitis, but not of great diagnostic importance.

The only physical find that seemed to mean very much was tenderness in the upper right abdomen which was found in about one-half the cases. The gallbladder was palpated in only three cases. Jaundice was present in less than 8 per cent.

In the discussion of the Cole-Graham method of examining the gallbladder, the fact that a normal gallbladder may not fill with the dye, and that an abnormal gallbladder may fill, was emphasized. The percentage of correct X-ray diagnosis was 92 per cent. Most of the errors oc-

curred in the group diagnosed as being pathological because of an irregular filling.

Of the entire group of 155 cases, the correct clinical diagnosis was made in over 92 per cent. Of the pathological cases 81 per cent had stones. In the group in which no pathology was found, four out of eleven patients were completely relieved of their symptoms.

DISCUSSION

DR. ARNOLD SCHWYZER, St. Paul: I think it would be healthful for most surgeons if their material were gone through by someone else in an impartial way without the surgeon's trying to have "a finger in the pie." From what date to what date were those cases taken?

DR. HOFFMAN: From 1926 to 1930.

DR. SCHWYZER: How many deaths?

DR. HOFFMAN: One. This patient died from pneumonia two weeks after the operation.

DR. SCHWYZER: One point is that the diagnosis cannot always be made absolutely even with the Graham-Cole test; there will always be a few cases where we don't know whether we do the right thing in taking out the gallbladder or leaving it in. We also will have a few cases that will not turn out right. In the X-ray examination, I know we sometimes differed; DR. HOFFMAN had his ideas about the case, and I had mine, but I must admit his percentage of correct diagnoses was larger than mine.

He mentioned among the symptoms—and I think that is one of the most important for the surgeon to go by—that if the pain is in the first part of the night, the patient may have duodenal ulcer, but if the pain comes after 2 o'clock in the morning, it is practically always a gallbladder case. About twenty years ago Rutherford Morrison of England made this statement, and I do not think it ever failed me.

DR. A. T. MANN, Minneapolis: This has been a very well-worked out paper and well given; it deserves more discussion. In my experience, a great many of these cases do have stomach symptoms which are often mistaken for ulcer of the stomach, or duodenum and some other things, and I have been very much interested in trying to unweave some of the characteristics of these symptoms. It seems to me that with the ulcer symptoms, the symptoms are apt to be worse in the Spring and Fall, and when similar symptoms come from the gallbladder they are more

apt to come in the Winter and Summer. So the point of incidence is different.

Then when we come to the foods which make the symptoms worse, for ulcer we have a whole list of things which are well-known, sugars, acids and fatty foods. It seems to me that, usually, when you have an ulcer and there is a type of food which makes it worse, there is a whole list of the same type of foods that make it worse; but if it is the gallbladder there may be only one, perhaps two, which make it worse, but not the whole list. I have had cases where it was applesauce which made the symptoms worse, and the patient could eat other things all right. Usually if you go into these histories carefully, you find there are one or two foods which tend to upset the patient and make him worse, whereas if the condition were ulcer you could expect, a long list of that class of foods which make the symptoms worse.

There was a large incidence of stones in these cases. I believe there are a good many without stones that have so much disease in the gallbladder that they have very definite symptoms, and they get relief after operation. Now, how are we going to get at those cases? You do not see stones in the X-ray; you may see change of function with the dye tests, and you will usually have, the digestive disturbances. But, as a rule, if the case approaches a situation where surgical removal should be done, we have a pretty definite point of tenderness in the gallbladder region, just as we do in the appendix region in appendicitis.

In my own mind, I formulate it something like this: If we have symptoms that might be reflex symptoms from the stomach, and we have a patient who has disability from that so that he cannot do his work, and, in addition to that, we do get the tenderness over the gallbladder, those cases I think are surgical.

DR. C. B. WRIGHT, Minneapolis: I would like to express my appreciation of this paper. The careful analysis of so large a series of cases operated on by a surgeon whose conservatism is proven by the large number of cases which showed advanced pathology, is of real clinical value.

In regard to the question of gastric acidity in gallbladder disease raised by DR. HOFFMAN, it is true that there are different opinions expressed in the literature. I believe, however, it is fairly generally conceded that in old gallbladder cases showing advanced pathology, the acids are lower and frequently absent.

My observations on the study of 175 cases in which no free HCl was found in the stomach, with fractional meal of which one-third showed

no acid after Histamine, quite a large percentage were old gallbladder cases, and I believe there is some connection between functionless gallbladders and achlorhydria. I have observed cases in which acid was present before the removal of the gallbladder and disappeared afterwards. This is not an unusual finding.

Gagschat showed experimentally on dogs that removal of the gallbladder produced entire absence of gastric acidity which persisted at least one year.

One must remember the fact, however, that approximately 30 per cent of people over sixty years of age will show absence of free HCl with ordinary test meal, and in gallbladder disease we are, as a rule, dealing with a fairly old group.

DR. HOFFMAN also speaks of one case with right lower quadrant pain. I would like to know how he explains a pain in this region due to the gallbladder.

DR. A. W. IDE, St. Paul: I would like to ask DR. HOFFMAN whether or not any symptoms were observed from the use of this dye? It has seemed to us that it is better to delay operation in these cases until there was time for the dye to be eliminated. We have observed that cases operated upon soon after the dye was given had a rather stormy time for a while after the operation.

DR. A. A. ZIEROLD, Minneapolis: I wish to congratulate DR. HOFFMAN on his paper. Whenever the subject of gallbladder diagnosis and treatment is offered, internists and surgeons alike feel free to discuss it at length; possibly because there is so little exact knowledge available. From DR. HOFFMAN's paper it seems that a question may be raised as to the identity of gallbladder disease. We may identify as suffering from gallbladder disease (1) that patient experiencing qualitative food distress, abdominal discomfort, belching, etc.; (2) that patient whose gallbladder fails to conform to the limits of the Graham-Cole test; (3) that patient whose gallbladder on microscopic examination is abnormal.

As these findings are not commonly present in all cases it would seem reasonable that diagnosis be limited and directed to but one of the three groups. DR. WRIGHT has mentioned a point which has been of particular interest to me because of some observations which we have been making at the Minneapolis General Hospital. It has been noted for some time that abnormal gallbladders, particularly those with obstruction at the cystic duct, are frequently accompanied by functional achlorhydria.

For the past year or more we have been doing routine fractional determinations of the stomach

content on all gallbladder cases coming to operation. We have found, as was to be expected, that the majority of these cases showed free hydrochloric acid only upon the exhibition of histamine. Following operation, further study of the gastric content was made at stated intervals, and with few exceptions the functional achlorhydria disappeared with removal of the gallbladder. If, on further observation, these findings proved constant, it would appear reasonable to believe that some of the symptoms attributed to gallbladder disease *per se* are really disturbances of secretion and, consequently, motility of the stomach. It might also be reasonable to assume that routine examination of the stomach content might aid in determining the prognosis of gallbladder operations.

DR. H. B. SWEETSER, Minneapolis: In connection with the complications which occur in gallbladder disease, I would like to mention a case which recently came under my care:

Nearly a year ago I was called by a physician about midnight to see a patient who had been, earlier in the evening, suddenly stricken with extreme pain in the epigastrium and was in shock. At operation an acutely inflamed gallbladder full of stones was found, and also an enlarged and hard nodular pancreas, together with many areas of fat necrosis in the large omentum. We removed the gallbladder, and the patient recovered and left the hospital, but did not do well and continued to complain. About two months ago the patient again came under observation, and now, on examination, presented a large tumor mass in the epigastrium, which at operation proved to be a cyst of the pancreas. Because of the relationship of pancreatitis to inflammation of the gallbladder and its dependence thereon, I have wondered if, at our first operation, we had drained the gallbladder instead of removing it, the pancreatitis might have subsided without such cyst formation.

DR. A. SCHWYZER, St. Paul: That lumpy condition of the pancreas we find quite frequently in cholecystitis, and I think it usually disappears with a cholecystectomy. I think it is secondary to the infection from the gallbladder. I remember one case that had a regular pyramid formed by the swelling of the pancreas. That was many years ago when we did not take out the gallbladder as a routine in these cases. In that case we took out the stones and drained the gallbladder, and the patient was quite well for probably nine months, then began getting worse again. There were no stones this time, and yet this great swelling in the head of the pancreas had formed

again. I figured that the patient had a persistent cholecystitis, and so took out the stoneless gallbladder, and the patient has remained well since. That swelling in the head of the pancreas we could feel through the flabby abdominal walls. I think DR. SWEETSER did the right thing in his case.

DR. A. E. BENJAMIN, Minneapolis: There are other diseases or complications that present symptoms similar to gallbladder trouble. I have seen individuals with prolapse of the stomach and colon which gave symptoms that resembled gallstones and were so diagnosed, but when they came to the hospital for investigation it was found that a kink existed in the hepatic flexure of the colon. Colitis and pericolitis associated with gallbladder disease may modify the symptoms considerably.

DR. HOFFMAN, in closing: I want to take this opportunity to thank the members of the Academy for the privilege of presenting this paper, and especially the members who were kind enough to discuss it.

In answer to DR. WRIGHT's question, I don't know just why the pains occur in the right lower abdomen. We know there is a frequent association between gallbladder disease and appendicitis, and some of our patients had that combination, but just what the percentage is I do not know. We very frequently seen in the cholecystogram that gallbladder is very low in the pelvis. The reason I made the statement as to the differences of opinions regarding the acid in the stomach is based on a number of reports, some indicating hyperchlorhydria and some an achlorhydria; but many of the reports indicate that there is no change or decrease in the acid. I was glad to hear the statement that after the removal of the gallbladder there was a diminution of the free acid, because that might account for our three cases that had diarrhea.

DR. IDE asked about the reaction from the dye. When we first started making the cholecystograms we used the dye in capsules, and we had quite a lot of trouble; the patient would call us up in the night and tell us he was having a great deal of nausea and vomiting. But since we have been using the emulsion and grape juice, we have had very little trouble. Occasionally there is diarrhea with nausea and vomiting, but none of the cases get very sick. I don't know what effect it would have on the patients to operate on them soon after taking the dye; usually they are operated on quite a while after taking the emulsion.

DR. MARTIN NORDLAND, Minneapolis, read a paper on "The Relief of Pain in Advanced Tuberculosis of the Larynx by Means of Surgery." This was illustrated with lantern slides.

ABSTRACT

The relief of pain in far-advanced tuberculosis of the larynx is important because, as a result of pain, there is a diminished intake of food and rapid failing of the patient. The author has had the opportunity of bisecting the superior laryngeal nerve five times for this purpose.

Applications of various remedies to the ulcerated surface have never been satisfactory.

Injections of alcohol into the superior laryngeal nerve for the relief of pain has many disadvantages. Among these are: the experiences of the operators is varied; the relief of pain is only transient, varying from a few hours to six weeks; repetition is difficult on account of connective tissue formation; the pain of recurrence is often more severe than the original pain, and there is occasional paralysis of the tongue due to the extension of the alcohol to the hypoglossal nerve.

Bisection of the internal branch of the superior laryngeal nerve is recommended as the surest method of relieving dysphagia, because it is simple, without technical difficulties and has no contra-indications, and because it partially immobilizes the vocal cords as well as relieving the pain.

The anatomy to be considered is the same as that for ligation of the superior thyroid artery, because the superior laryngeal nerve is so closely related to this artery.

The operation is done, after using a few cubic centimeters of 2 per cent novocain, after the patient has been put in the same position as for thyroidectomy.

After the operation all painful sensation upon swallowing food disappears immediately. When pain persists after the resection of the superior laryngeal nerve, it can be assumed that the ulceration is not confined to the larynx.

The operation has a definite symptomatic value and may have a curative possibility.

The operation is suitable for other painful inflammatory processes in the larynx.

DISCUSSION

DR. F. L. JENNINGS, Oak Terrace (by invitation): Tuberculosis of the larynx is a secondary condition and usually occurs with advanced tuberculosis of the lungs. The marked soreness and painful swallowing that DR. NORDLAND has spoken of is the result usually of extensive disease in the larynx. I have here two models which show extensive tuberculosis of the larynx. It is in lesions similar to these that patients suffer so much.

I was familiar with the previous work of DR. NORDLAND in which he had shown that there were

motor fibres in the superior laryngeal nerve, and therefore watched two of the cases on which he had sectioned these nerves to see if there were any changes in the movements of the larynx, but the destruction in both of these cases was so great that I was not able to see any difference. However, we have known for a long time that the superior laryngeal nerve is largely a sensory nerve, and the pain and discomfort which our patients with extensive lesions of the larynx suffer is intense. Anything which will relieve the painful deglutition which these patients encounter is a justifiable procedure.

I have tried alcohol injection of the superior laryngeal nerve by every technic which I have been able to get hold of, but my results have been uniformly unsuccessful, which is quite in contrast with the results which DR. NORDLAND has obtained by sectioning the nerve. The operation is a simple one. The incision is small and heals quickly. It is our practice to remove the skin clips 36 to 48 hours after operation and bridge the incision with sterile adhesive. All of these operations were on advanced, moribund cases of tuberculosis, nevertheless the wounds healed by primary intention.

DR. A. SCHWYZER, St. Paul: This operation is exceedingly well conceived, and it surely is a great boon for our cases. I am only sorry that I did not think of this myself years ago. If one has seen how much these patients suffer, and how they are afraid to eat, then to have this relief and the improvement in nutrition which would follow, one cannot help feeling that this is the best thing for such cases. I have at one time used alcohol injection, but the result was transitory. In one case I removed the larynx. You have to be sure that you haven't much involvement in the lung. In the case in which I removed the larynx, it was too much for the patient, for he gradually went down anyway afterwards. As to the technic the doctor uses in his cases, I wondered when I saw how he proceeds, whether one could not make a median incision between the hyoid bone and thyroid cartilage; one would simply have to go through the sternohyoid muscle and then, by going along the thyrohyoid ligament on both sides, could get the nerve with great ease, as it is the only strand entering this ligament.

DR. E. K. GEER, St. Paul: I think this procedure has a very definite place in the treatment of ulcerative laryngeal tuberculosis, although a small one. I have used it once (DR. COLVIN doing the operation) on one side, on a patient in whom I had been successful with alcohol injection on the other side. Of course, we should not use

resection of the superior laryngeal nerve at first, because in the majority of cases we can get enough relief by vocal rest, light treatment and applications of local anesthetics, such as anesthesia in mild cases and cocaine in severe ones.

Dr. NORDLAND, in closing: There is just one thing I neglected to mention. This procedure can be used for other things than tuberculosis. It is particularly valuable in relieving the pain from other inflammatory processes, and in carcinoma which invades the larynx.

Dr. ARNOLD SCHWYZER reported a case of ligation for aneurysm of the innominate artery upon which he had operated 22 years ago, and just recently learned that the patient is still living and well.

The meeting adjourned.

R. T. LAVAKE, M. D., Secretary.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. John A. Fowlie, formerly located at Minot, has moved his offices to Hope, N. D.

Dr. and Mrs. Horace Newhart, Minneapolis, have returned from a month's auto trip to California.

Dr. R. A. Carrow has sold his practice at Caledonia, Minn., and is now located at Black Rock, N. M.

Dr. J. Arthur Ryan, St. Paul, was recently married to Miss Mildred Bresnahan, of Northfield, Minn.

Dr. Earle Weible, Berthold, N. D., has moved to Wahpeton, N. D., and opened offices for general practice.

A new hospital has been opened at Spring Valley, Minn. All of the local physicians are working to make the hospital a success.

Dr. B. A. Leopard, formerly of New Richland, Minn., has moved to Albert Lea, and opened offices for general surgery practice.

Dr. V. G. Allen, Harvey, N. D., has moved to Rugby, where he has purchased the practice of Dr. H. L. L. Naegeli.

Dr. F. E. Keenan, Great Falls, has been named as a member of the state board of medical examiners for the state of Montana.

Dr. C. H. R. Hovde, formerly located at Los Angeles, Calif., has opened offices for general practice at Yankton, S. D.

Dr. and Mrs. Henry W. Cook, Minneapolis, have been spending the past month motoring through Canada and the eastern cities.

Dr. J. E. Bruner who has been in active practice for many years at Frederick, S. D., is now located at Aberdeen.

Dr. V. H. Moats, Tuttle, N. D., has moved his offices to McClusky, N. D., where he will continue in general practice.

Dr. Leo S. Burns, a graduate of the University of Minnesota Medical School has opened offices for general practice at South St. Paul.

Dr. C. E. Harkey, who has been at the U. S. Veterans Hospital at Ft. Snelling for the past five years, has been transferred to Louisville, Ky.

Dr. V. J. Telford, who was formerly located at Litchfield, Minn., has moved to Long Prairie, Minn., where he will continue in general practice.

Dr. Harold Muus, a recent graduate of the University of North Dakota, has become associated with Dr. J. E. Engstad, of Grand Forks in general practice.

Dr. A. C. Baker, Fergus Falls, Minn., was among the visitors who registered at the meeting of the American College of Surgeons in New York last month.

Dr. C. W. Hargens, Hot Springs, S. D., has again been appointed superintendent of the county board of health, on which board he has ably served for many years.

Drs. J. A. Eckrich, W. M. Paton and B. F. Roberts have been added to the staff of the Aberdeen Clinic, all three doctors being specialists in their particular lines of work.

Drs. C. W. Schoregge and R. H. Waldschmidt, Bismarck, were both elected members of the American College of Surgeons at the annual meeting held in New York City last month.

Dr. P. F. Holm, who has been in active practice for the past 33 years at Wells, Minn., has disposed of his business to Dr. P. W. Demo, who has been associated with Dr. Holm during the past two years.

Dr. H. D. Benwell, Grand Forks, who has recently returned from a year's visit in Europe, was the principal speaker at the October meeting of the members of the Grand Forks District Medical Society.

Dr. E. Erickson, Garretson, S. D. has purchased the practice of Dr. L. N. Casmey, at Halstad, Minn., and is now settled at his new home. Dr. Erickson is a graduate of the University of Minnesota.

Dr. R. A. Scott, Detroit Lakes, Minn., physician and surgeon, active community worker and major in the medical corps in the World war, has accepted a position on the Veterans' hospital staff at Los Angeles, Calif.

Dr. W. H. Robilliard, a prominent physician of Faribault, Minn., died on November 3rd, at the age of 70 years. Dr. Robilliard had been in active practice for the past 35 years and was an outstanding leader in civic and fraternal life.

A joint meeting of the Eastern Montana and the North Dakota Medical Societies was held last month at Glendive, Mont., with Drs. J. H. Garberson, Miles City, and A. P. Nachtwey, Dickinson, N. D., as the principal speakers on the program.

"Exclude the child with a cold. That is the best way to keep up school attendance as well as to protect the health of the children."

This is the substance of a bulletin on the subject of illness among grade school children issued by the Minnesota State Medical Association.

Dr. Edward L. Tuohy, Duluth, district governor of the Ninth District International Rotary Club, was at Owatonna recently and made a very interesting address on his recent trip to Vienna, where he was a delegate to the annual meeting of Rotaries.

Kappa Phi chapter of Phi Chi, national medical fraternity, have recently opened a new \$40,000 fraternity house at 325 Harvard Street S. E., Minneapolis, for under-graduate members at the University of Minnesota. The building, of the English town house type, and the exterior is of skintled brick with Bedford trim.

The annual meeting of the West Central Minn. Medical Society was held at Morris, last month, with Dr. Emil Geist, Minneapolis, being the guest speaker. Officers for the coming year were elected as follows, Dr. N. F. Doleman, Tintah, president, Dr. B. R. Karn, Ortonville, vice president, and Dr. A. L. Lindberg, Wheaton, secretary.

It doesn't look so much like hard times when a cheap medicine show can come into a small town like Elk River, Minn., and operate for a week and take out of the community anywhere from \$1,500 to \$2,000 from the sale of medicine which probably wasn't worth the bottles in which it was sold as far as any real medicine value is concerned.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine,

Medical School, University of Minnesota. The programs for the month of December will be as follows: Dec. 2nd—Diagnosis of Intussusception. Dec. 9th—Epilepsy Cures. Dec. 16th—The Tuberculin Test. Dec. 23rd—Control of Communicable Diseases. Dec. 30th—Attitudes toward Cancer.

The Minnesota Medical Alumni Association held their annual meeting last month at the University of Minnesota, with Dr. J. F. Corbet, Minneapolis, presiding. Papers were presented by the following: Dr. John Butler, Minneapolis; Dr. John McQuarrie, head of the department of pediatrics, University hospital; Dr. J. R. Aurelius, St. Paul; Dr. E. Starr Judd, Rochester, Minn., president of the American Medical association; Dr. C. Naumann McCloud, St. Paul, and Dr. J. M. Hayes, Minneapolis. Dr. Richard E. Scammon, dean of medical sciences, University of Minnesota, spoke at the annual business luncheon meeting. At the afternoon session Dr. C. N. Hensel, St. Paul, presided, and the following speakers were on the program: Dr. W. H. Cole, St. Paul; Dr. S. B. Solhaug, Minneapolis; Dr. S. Marx White, Minneapolis; Dr. T. J. Kinsella, Glen Lake, and Dr. J. C. McKinley, of the University of Minnesota Medical school.

Robert G. Errington, proprietor of a nature cure clinic in Fargo, who was found guilty for practicing medicine without a license, was given the maximum sentence, 30 days in jail and \$300 fine. If he fails to pay the fine he must serve an additional 150 days in jail. In passing sentence, the Judge declared that Errington had openly defied the law not only in North Dakota but in other states, and that reports had come to him that even had Errington been licensed in this state he has been guilty of misconduct. Errington admitted that he had been arrested four times in Minnesota for practicing without a license, and that on one occasion he was sentenced to six months in jail and another time was fined \$100.00.

Mrs. Pauline L. Schultz, St. Paul, has surrendered her Massage License to the State Board of Medical Examiners. Mrs. Schultz, who claims to be a Naturopath, has been under indictment for Manslaughter since last spring following the death of a St. Paul girl after an alleged abortion. Mrs. Schultz has maintained offices for several years and she has practiced under a Massage License. The County Attorney's office, was unable to produce certain essential evidence in this case and it was therefore deemed advisable not to attempt a trial of the indictment. However, before the indictment was nolle, last month, Mrs. Schultz advised the Board in writing that she was surrendering her massage license and closing her office.

Sioux Valley Eye and Ear Academy

The annual meeting of the Sioux Valley Eye and Ear Academy will be held at Omaha, on November 18th. Officers are Dr. C. T. Uren, Omaha, president; Dr. J. B. Gregg, Sioux Falls, vice president; Dr. F. H. Roost, Sioux City, secretary-treasurer. The following interesting program will be presented:

MORNING SESSION

"The Management of Cataracts and Their Complications"..... Dr. Albert N. Lemoine, Kansas City, Mo.
 "Operative Points Which Make Intranasal Operations Successful".....Dr. Fred J. Pratt, Minneapolis, Minn.

AFTERNOON SESSION

2:00 P. M.—CASE REPORTS AND CONFERENCE

1. "The Use of Sulzberger's Iodine Powder"
 Dr. J. Calvin Davis, Omaha, Nebraska
2. "Congenital Occlusion of the Posterior Nares"
 Dr. Royal F. French, Marshalltown, Iowa
3. "Ludwig's Angina"
 Dr. Samuel A. Kellar, Sioux Falls, South Dakota
4. "Ligation of the Carotid Artery to Control Nasal Epistaxis," Dr. L. G. Howard, Council Bluffs, Ia.
5. "Chronic Maxillary Sinusitis—Report of Additional Studies," Dr. John B. Potts, Omaha, Nebraska
6. "Infection with Sporothrix"
 Dr. Court R. Stanley, Worthington, Minnesota
7. "Post Tonsillitis—Post Quinsy Septicemia"
 Dr. T. R. Gittins, Sioux City, Iowa

BOOK NOTICE

THE FIRST TWO YEARS, a study of twenty-five babies, by Mary M. Shirley. University of Minnesota Press, Vol. 1. 1931. \$2.00.

Scientific observations on the physical and mental development of the infant plays a prominent part in our modern approach to child study. As a result of a number of investigations in various centers a point of view is evolving that pictures the development of the infant as an orderly process in which different types of response unfold at successive stages.

"The First Two Years" by Mary M. Shirley, Ph.D., assistant professor in the Institute of Child Welfare of the University of Minnesota, is the first volume of a series of three dealing with the detailed account of the development of twenty-five Minneapolis babies as observed week by week over a period of two years.

This first volume contains the most complete record of the entire course of postural and locomotor development that has been obtained by the systematic observations of trained investigators for so large a number of children. In companion volumes intellectual development and personality manifestations and their relation to the motor sequence will be discussed.

In undertaking the study the co-operation of twenty-four prospective mothers was obtained. Periodic exam-

inations of the infants were made, first in the hospitals and later in the homes, by a psychologist, Dr. Shirley, and a physician, Dr. Edith Boyd. The mothers kept daily records on prepared forms and supplied much supplementary data. Dr. Boyd will publish her observations on the physical growth and physiological development of these infants in a later monograph.

In the present volume the many aspects of early locomotion are fully described and illustrated and 700 graphic walking charts records are analyzed. Motor play during the first two years is discussed and described in detail.

Chapter eight establishes a relationship between physical growth and locomotor development, discussing the anatomical factors possibly related to motor skill and the physiological factors involved in walking development.

The study is the most detailed and comprehensive ever attempted over so long a period of time on this phase of development. The author draws the conclusion from the entire study that "The pattern-like character of motor development seems best accounted for on the basis of maturation because there are anatomical and physiological correlates with motor development and because the sudden appearance of new stages points toward the maturation hypothesis."

JOHN E. ANDERSON, M.D.

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PRESENT CONCEPT OF TRAUMATIC SHOCK AND ITS TREATMENT

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MINNEAPOLIS, MINNESOTA

What Is Shock? Under the generic term of shock are often described a large number of relatively unrelated conditions with some manifestations in common. The syncope attending the unexpected receipt of bad news; the faint accompanying sudden assumption of the erect posture from the supine; the collapse of strong men in line anticipating the pain of vaccination; the prostration occurring with sunstroke or stuffiness of an ill-ventilated and overheated room; the collapse consequent upon a severe blow to the epigastrium or the testis; the faint attending the quick withdrawal of large accumulations of fluid from body cavities; the effects of prolonged ether anaesthesia; the depression accompanying spinal anaesthesia; the consequences of prolonged manipulation of the abdominal viscera; and the grave symptoms resulting from severe trauma or fresh loss of a large quantity of blood—these and other states and syndromes are often grouped together under the all-inclusive caption of shock.

This array of widely differing conditions signifies that there are many types of shock or that shock is not an entity but a state manifested by a certain group of symptoms. Shock has been likened to fever. A host of conditions may give rise to somewhat similar rises in temperature. The underlying physiologico-pathological disturbance in no two, however, may be the same. So with shock, a few similar symptoms may be the expression of numerous unrelated states.

For a large number of the conditions listed

above, it may be said that the syncope is only temporary and that immediate recovery of consciousness without sequellae attends the institution of such conservative measures as placing the head low, having the patient lie down or exerting gentle compression over the abdomen.

In his monograph on Traumatic Shock, Cannon defined shock as "a general bodily state which occurs after severe injury, characterized by a persistently reduced arterial pressure, by a rapid, thready pulse, by a pallid or grayish or slightly cyanotic appearance of the skin which is cold and moist with sweat, by thirst, by superficial rapid respiration, and commonly by vomiting and restlessness, by a lessened sensibility and often by a somewhat dulled mental state."

Though difficult of definition, shock may be said to be a definite clinical concept. In the following, the discussion concerns shock associated with severe injury.

What Is the Nature of Shock? The prostration following severe injury has ever continued to be an extremely interesting source of speculation as to the cause of the mystifying train of occurrences. Much of our information concerning shock has been obtained through animal experimentation, and it is to be fully conceded that the factor of anaesthesia modifies in some degree the response to injury. During the World War, shock was given intensive study by a group (Shock Committee) of clinicians and physiologists who had given special study to the circulation.

*Read before the meeting of the Great Northern Railway Surgeons' Association at Glacier Park on June 29, 1931.

The numerous daily tragedies of the war afforded abundant material to study the manifestations of traumatic shock, and it will ever be to the credit of medical men that, under the tension and pressure of most unfavorable circumstances, the opportunity was not neglected to contribute to a better understanding of this condition. A vast fund of information was accumulated, resulting in a better appreciation of the nature of shock and standardization in treatment. Recent re-investigation by Blalock and by Parsons and Phemister of some of the conclusions of the Committee as to the nature of shock has aided materially in clarifying some of the mysteries enshrouding the condition.

In 1864, Goltz found that repeated blows on the exposed mesentery of a frog caused temporary cessation of cardiac contractions and paralysis of vascular tone. It was consequently long contended that shock was adequately explained as a reflex vasomotor paralysis. Meltzer later postulated that shock was due to inhibition of vital functions of the nervous system. The theory of vasomotor paralysis, or exhaustion, found ardent support in the studies of Crile. It has since been sufficiently proved that the vasomotor mechanism is working over-time in shock. Seelig and Lyon found that severance of the sciatic nerve releasing the extremity from its vasomotor control in a shocked animal was followed by a greater increase in flow of blood from the femoral vein than occurred in the normal animal.

Guthrie later observed that, whereas cutting the sciatic nerve in a normal animal resulted in an increase of 22 per cent of blood flow from the femoral vein, in a shocked animal the increase was 76 per cent. Seelig and Lyon indicated further that stimulation of the central cut end of the vagus resulted in an elevation of blood pressure in shock, contradicting the presence of vasomotor paralysis. Mann³³ has shown too that when asphyxia is induced in a shocked animal the vasomotor center may constrict more in the hope of furnishing an adequate blood supply to the vital centers.

The factors that sustain an adequate circulation are (1) the heart, (2) an effectual peripheral resistance, and (3) an adequate blood volume. That an efficient peripheral resistance or vasomotor tone is present in shock has already been pointed out. It has also been shown adequately that there is no heart failure in shock. When fluids or blood are introduced into the circulation in combating shock, the heart takes care of them without embarrassment. Mann has also indicated that when animals are allowed to die of shock

the heart continues to beat even when the blood pressure cannot be registered and respiration has ceased. Since there is no heart failure or disturbance in the peripheral resistance in shock, the reason for an inadequate blood pressure or circulation must be found to reside in the third factor, viz., an altered blood volume.

That a diminution in blood volume obtains in shock was very nicely shown by Keith in blood volume studies made during the war. The dilution of vital red injected intravenously permitted of an accurate determination of the volume of the blood, and Keith found that the degree of shock could be well correlated with the reduction in blood volume.

The problem of what has become of the lost blood in shock in the absence of external hemorrhage resolves itself, as Cannon states in his monograph, into a determination of where this lost blood might be. It certainly is not in the arteries, for, with an effective heart action and adequate peripheral resistance, a normal blood pressure and circulation should be maintained. The theory that the blood is stagnant in the splanchnic vessels of the abdomen in shock has been widely held. Malcolm, an English surgeon, has long asserted, on the contrary, that the abdominal viscera are pale in shock. Sir Arthur Keith states that the venous reservoirs of the chest and abdomen in man have a capacity of only about 450 c.c. The loss of this amount of blood from the circulation would not produce shock in a well man, and the distension of the veins incident to the presence of that quantity of blood in these veins would make them conspicuous—a finding that does not obtain. If the lost blood were present in the systemic veins, they would stand out prominently. Anyone attempting a venepuncture on a shocked patient is familiar with the difficulty of penetrating the collapsed walls of their veins.

That the lost blood might well be in the capillaries, the large reservoir for blood in the body, is easily apparent. Red blood cell counts made on shocked patients indicated that there is a concentration of blood in the capillaries.¹² Whereas normally the discrepancy in red blood cell counts in venous and capillary blood shows a concentration of about 3 per cent in the capillaries, in shock the difference is often great. Differences of 2 million cells per cubic millimeter are not unusual in severe shock. Hemoglobin determinations similarly show elevations for capillary blood. Plasma and water must therefore be lost from the circulation to permit of such a concentration. These observations of Cannon and his co-workers have

not been found by all observers. Parsons and Phemister failed to note any such discrepancies in red cell counts in shocked animals.

The conclusions of the War Shock Committee tended to show that following injury of tissue a histamin-like toxin is liberated that dilates the capillary bed, permitting the blood to accumulate in the capillaries. Normally only a fraction of the capillary bed is in use at any one time (Krogh).³⁰ Dilation of the capillaries would permit of considerable stagnation of blood.

However, as Wallace pointed out during the war, there is no edema or general juiciness of the tissues of the body in shock. If fluid were lost through the medium of capillary dilation, the loss should be uniform throughout the body. Only the injured tissue is edematous.

In repeating some of the muscle trauma experiments performed by Bayliss and Cannon, Blalock and Bradburn⁷ made a very interesting observation. They traumatized the extremity of an anaesthetized dog with light blows. A tourniquet was applied high up on the extremity above the site of the trauma, but the femoral artery was left outside the ligature. When the ligature was released, a fall in blood pressure followed just as Cannon and his associates had noted. The determination of the oxygen content of the venous blood returning from traumatized extremity indicated that this blood was richer in oxygen than that from the non-traumatized hind leg. This suggested very definitely the local accumulation of blood in the injured extremity. Blalock has been able to show that when shock follows trauma, there is sufficient extravasation of blood and plasma through injured capillaries in the traumatized extremity to account adequately for the shock.

Invariably when shock was present, there was a gain in weight of the traumatized leg amounting to from 3 to 4 per cent of the body weight. Withdrawal of blood amounting to 3 to 4 per cent of the body weight regularly produces shock in a normal animal. Parsons and Phemister reached similar conclusions and found that there was always an increase in the limb volume of the traumatized extremity adequate in degree to account for the blood loss. They found no evidence of absorption of a toxic substance liberated by damaged or asphyxiated tissues.

Blalock has indicated, further, that accompanying trauma to the intestines and also in burns that there is a local loss of blood and plasma adequate in amount to produce shock. Though the toxic factor has not been wholly eliminated as is indicated by some of Blalock's¹⁰ own injection experiments in which a fall of blood pressure

occurred in normal dogs upon the injection of the fluid accumulating in tissues after injury, Blalock's experiments serve to emphasize the local loss of blood as the important item in the production of shock. The local loss of blood and plasma is in accord with the absence of general tissue edema in shock, a fact that the capillary dilatation theory, through the agency of a toxic factor, was at a loss to explain. Certainly, to the clinician who is called upon to treat shock, it is far more satisfactory to know that the mechanical loss of blood rather than a mysterious toxin is to be combated.

Recognition of Shock. During the World War, Fraser and Cowell made numerous blood pressure determinations on wounded men at the front lines. As a consequence of these studies he divided traumatic shock into two groups, viz., (1) primary shock in which wounds of a mortal character were sustained. Such patients present the symptoms of severe shock at once, and unless energetic treatment directed at stopping hemorrhage and replenishing the blood loss are instituted immediately, death is inevitable. (2) secondary shock, the commonly observed variety, in which the symptoms of shock do not present themselves immediately after the receipt of trauma, an interval of several hours often elapsing before the onset of symptoms of shock.

An increase in pulse rate and a reduced arterial pressure are the significant objective findings in shock. The exposed parts appear pale, and a tinge of cyanosis is often noted. Sweating is usually a prominent feature, and thirst is complained of. The patient is frequently restless and tosses about, and the respirations are quickened. In severe shock, air hunger is manifest. Owing to clouding of the sensorium, a patient who has sustained severe injury accompanied by shock rarely says that he suffered much pain.

With our better understanding of the nature of shock, it is apparent that the symptoms of shock are those of hemorrhage. Variation in the degree of injury or hemorrhage will be manifested by similar differences in symptoms. A hurried pulse and a depressed arterial blood pressure are the most significant signs of shock. Following injury, a patient with a systolic blood pressure of less than 100 should be looked upon as being in potential shock. When the systolic pressure is less than 90, the patient is in actual shock and treatment aimed at combating shock should be instituted. Bayliss observed that if the systolic blood pressure of a cat were maintained at 58 mm. Hg. that the vasomotor reflexes were soon abolished. Employing Tigerstedt's experiment of "Heart-tem-

cavity. Cannon¹² found that when the systolic pressure was maintained at 70 mm. Hg. for 1.5 to 2 hours that paralysis of the bulbar centers followed due to an inadequate circulation to the vital centers. A systolic pressure of 70 mm. Hg. is generally accepted as the critical level of blood pressure.* The normal vasomotor responses cannot obtain with a continued low blood pressure, indicating the rationale of early treatment of shock. Whereas an extremity may tolerate exclusion from its source of blood supply for 2 to 3 hours without untoward effect, a few minutes of total deprivation, or a few hours of inadequate flow of blood to the vital and higher centers, terminates fatally.

Occasionally shock may be present in a patient with a slow pulse. I have seen a patient in rather severe shock with a pulse of 80. Pallor, slight cyanosis, quickened respirations, sweating and thirst indicated the necessity of determining the blood pressure despite a fairly normal pulse. The systolic pressure was found to be less than 70. On the whole, it may be said that the blood pressure is the most reliable criterion in ascertaining whether shock is present. There are also a few instances of mild shock, in which the blood pressure is within the normal limits (105-115 mm. Hg.) but the pulse continues to be hurried. In such instances the replenishment of the depleted blood volume usually results in a material decrease of the pulse rate, indicating mild shock. Early leucocytosis is usual in severe shock. A subnormal temperature is typical of shock. The profuse sweating contributes to a decrease in body temperature and augments the severity of the shocked state.

In his cardiac output determinations Blalock⁵ found that the cardiac output per minute was reduced to one-fourth of the normal does lack of there was a significant diminution in the mean blood pressure or distinct elevation of the pulse rate. The interval that obtains between the receipt of trauma and onset of symptoms of shock is accounted for in some measure by our inability to detect its presence by the usual criteria, until shock is manifestly present.

What Injuries Give Rise to Shock? It has already been pointed out that shock is synonymous with hemorrhage. In the latter, the blood escapes to the exterior; in the former it is lost from the circulation into the tissues through leaks in the

injured capillaries. The loss of blood plasma is equally as serious as the loss of blood corpuscles, for the loss of blood plasma means loss of blood proteins and consequently a lessened osmotic pressure of the blood. Only when the hemoglobin is reduced usually from 30 to 50 per cent before sufficient oxygen carriers become manifest.³⁷ Reduction of the blood volume by one-half, uniformly produces severe shock that proves fatal unless the blood volume is partially restored.

Any type of injury with considerable local bleeding into the tissues may, therefore, give rise to shock. Fractures of the lower extremities, especially if accompanied by considerable bruising of the muscles, are very likely to be accompanied by shock. Transportation without adequate immobilization of the injured member often provokes shock. Fractures of the lower extremity are more frequently followed by shock than similar injuries in the upper, accounted for largely by the presence of larger muscles in the lower extremity giving rise to more bleeding when injured. Fractures of the femur and pelvis are frequently attended by shock.

Head injuries, unless accompanied by a good deal of external hemorrhage, rarely give rise to shock. Fractures of the skull, unless associated with intraventricular hemorrhage or injury of the medullary centers rarely give rise to depression of blood pressure or shock (Fraser and Cowell).¹⁹ Isolated fractures of the spine rarely produce shock. And in a patient with a fracture of the spinal column presenting shock concomitant injuries elsewhere, such as intraperitoneal damage or a broken femur, should be looked for.

Wounds of the thorax in which multiple fractures of ribs occur may give rise to shock, owing to the formation of numerous hematomas. Severe shock may also follow the fracture of a single rib, in which the lung is punctured with the accumulation of blood in the pleural cavity. Large open wounds of the chest are often followed by shock incident to the diminution in vital capacity.

Intraperitoneal injury, unless accompanied by severe hemorrhage, does not give rise to significant depression of blood pressure. Contrary to general belief, the perforation of a hollow intraperitoneal viscus is not followed by shock with immediate reduction of arterial pressure. Collapse and disability, however, are the rule, owing to the pain produced by irritation of the parietal peritoneum. I have observed a traumatic perforation of the rectum in which the patient complained of no abdominal discomfort. The inundation of the peritoneum by the acid content of duodenum and stomach with spontaneous perforation of an ulcer suffices to explain the immediate disability that these patients present.

*Blalock and Bradburn believe that vasoconstriction does not occur after injury to the central nervous system, and state that the critical level of blood pressure cannot be applied in the usual manner to cases of trauma to the central nervous system. The observation that a fall in blood pressure during operative procedures on the central nervous system is not as serious as similar falls in pressure after other types of operations or after hemorrhage, they feel corroborates this impression.

True shock is, however, not present early. The blood pressure, pulse rate and leucocyte count are not altered at first. The appearance of a hurried pulse and depressed blood pressure herald the onset of impending peritonitis. In peritonitis that occurs postoperatively, it may again be said that the blood pressure continues at a fairly normal level, despite a quickened pulse, until near the end. The terminal "toxic shock" of peritonitis does not respond to any of the remedial measures that are of value in true shock.

After the lapse of some time (six hours or more) the blood pressure is usually low following penetrating wounds of the hollow viscera. Wounds of the solid intraperitoneal viscera, such as spleen and liver, are followed by immediate shock if the blood loss is great. When the bleeding is gradual, there may be no manifest shock. When such an abdomen containing considerable blood is opened, however, caution should be taken to open the peritoneum slowly, for sudden decompression may precipitate shock.⁴¹

Extensive burns are commonly accompanied by shock. Contrary to the belief that the depression of blood pressure is due to the absorption of injured toxic material, Blalock has shown that the local loss of blood and plasma from the denuded area account adequately for shock in such instances. The effectual stopping of local transudation of plasma from the burned area is, therefore, also a significant factor in the treatment of severe burns.

In the shock that occurs after operation, such factors as prolonged ether anaesthesia and cooling of the body, especially in tedious abdominal operations with undue exposure of the abdominal viscera, play a part in the genesis of shock. The most significant factors are rough handling of tissue and hemorrhage.

Gatch and Little²⁰ have made determinations of the amount of blood lost during some of the more common operations. They found that appendectomy could be accomplished through a McBurney incision with a 4 to 8 c.c. blood loss; when done through a right rectus incision the loss was 17 to 21 c.c. Drainage for acute osteomyelitis of the humerus was accompanied by a 176 c.c. blood loss; during radical amputation of the breast 400 to 710 c.c. were lost; nephrectomy was attended by loss of 816 c.c. and during laminectomy 672 c.c. were lost. These findings were surprising to surgeons and attendants alike, the authors, products of the Halsted School of minute hemostasis, state. Blalock has recently shown, also, that in the shock accompanying prolonged manipulation of the abdominal viscera, sufficient blood and plasma are lost (3 to 4 per cent of body weight) to account adequately for the production of shock.

Treatment of Shock. The rationale of treatment in shock consists of measures that replenish the depleted blood volume. The cause of death in severe shock is an inadequate blood supply to the vital centers. Anemia of the bulbar nuclei is not well tolerated, and late treatment of severe shock is often ineffectual because of the irreparable damage to the vasomotor centers.

The emergency treatment of traumatic shock outside the hospital limits itself to the control of hemorrhage by pressure and the employment of the tourniquet and symptomatic measures. The experience of the war with the Thomas splint taught that no fracture of an extremity should be transported without adequate fixation. Agitation of the ends of a broken bone gives rise to more tissue damage and unnecessary bleeding.

The early application of external heat is an item of great value. The loss of body heat through profuse sweating is often considerable in shock, and the exhibition of warmth is often followed by immediate improvement. The alleviation of pain with morphine and assuaging thirst by the free oral administration of warm fluids are symptomatic remedial agents of great value in mild shock.

The best guide as to the procedure to be followed in the treatment of shock is the degree of shock present as determined by depression of the blood pressure. Whereas mild shock often responds quickly to the symptomatic measures of increasing body heat, the relief of pain and free oral administration of fluids, in severe shock these agents alone are of little or no value. The indication is to increase immediately the diminished blood volume. The intravenous administration of normal saline* (2,000-4,000 c.c.) usually results in an immediate restoration of the blood pressure. Only, however, when the degree of shock is fairly mild does a sustained elevation of the pressure follow. Only a fluid that possesses the same osmotic pressure as the blood will remain within the vessels. In shock there is a lowering of the osmotic pressure of the blood and administered saline escapes into the tissues.

During the war, Bayliss developed the use of gum acacia solution, which, in a 6 per cent aqueous solution, exhibits colloidal properties like that of the blood. It has recently been marketed and made available for general use. Theoretically, it should prove effectual in combating all types of shock in which the blood loss has not been so great that the organism suffers from want of oxygen carriers. And as has already been indicated, a fatal outcome usually attends a loss of one-half the blood volume unless quickly replenished,

*Glucose solutions are of no greater value than saline. There is no deficiency in the blood sugar in shock, and glucose in solution is a crystalloid and diffuses through semi-permeable membranes. Only a colloidal solution having the same osmotic pressure as blood will remain within the vessels.

whereas oxygen carries (red blood cells) may be reduced to one-fourth the normal in acute experimental hemorrhage, if the plasma is replaced before their want becomes manifest.

The most effectual means of restoring a diminished blood volume is transfusion. In severe shock, preparations for transfusion should be made immediately, the temporary fortifying intravenous and subcutaneous administration of saline being given meanwhile. On an active surgical service, where one frequently encounters cases presenting severe shock, it is a good plan to have a list of available donors posted in the operating room. At the University Hospital, over a six year period, the blood grouping of convalescent cases that could well give blood (hernia and fracture cases, etc.), has been determined, and a donor is immediately available. In those instances in which time does not permit of cross matching, group IV donors have been used with complete satisfaction. Many lives have been saved by this measure of preparedness.

In transfusing for shock, it should be remembered that the depleted blood volume should be adequately restored. Lesser blood losses are well-borne; injury that produces shock, unless some other complicating factor (e.g., pneumothorax) is present, is associated with a rather large blood loss. Healthy donors may give 700-800 c.c. of blood without any untoward effect other than temporary faintness. When 1,000 c.c. is withdrawn, mild shock occasionally obtains. Transfusions of blood for shock should therefore be larger in amount than the supportive transfusion given for anemias or as a preoperative measure in debilitated subjects. Transfusion of 700-800 c.c. should be the rule.

If a subsequent decline follows a temporary rise in pressure, transfusion should again be resorted to. Death from shock in a patient who is otherwise a good risk and treated under favorable conditions is reprehensible and should not occur. Transfusion should be repeated until a normal pressure continues to be sustained. A few years ago, a boy of seventeen was admitted to the University Hospital with severe burns sustained in a gasoline explosion. The administration of saline in large amounts only temporarily raised the blood pressure. A short time after the discontinuance of the infusion, the blood pressure fell. A transfusion of 800 c.c. of whole blood resulted in maintenance of a normal pressure for several hours, followed by a decline. Three transfusions totalling 2,400 c.c. in amount were given before the normal pressure continued to be maintained and all symptoms of shock disappeared.

Somewhat more than a year ago a patient was admitted to the University Hospital with eight fractures of pelvis, femurs, tibias and fibulas, exhibiting profound shock and air hunger. The pulse could not be felt, and a blood pressure registration was not obtained. Heart sounds could not be heard on auscultation, but the patient breathed. Immediate infusion of 2,000 c.c. of normal saline, performed through an incision in the cubital space of the forearm, while preparation was made for transfusion did not effect a blood pressure that registered. Transfusion, employing two group IV donors and giving 1600 c.c. of blood, revived the patient and she subsequently walked out of the hospital.

The type of transfusion employed is not a matter of great concern. One should use the method with which he is most familiar. On the Surgical Service at the University Hospital for more than ten years, the transfusions for shock have been done by the Kimpton-Brown tube method. The advantages of the method are that a large transfusion can be given quickly, with little cooling, and with practically no trauma to the blood, and, consequently, without reactions. The technic of the method, though somewhat more difficult than the transfusion of blood to which an anticoagulant has been added, is simple and is easily mastered.

Henderson and Haggard stated some years ago that the transfusion of citrated blood in dogs bled to the critical level of blood pressure (70 mm. Hg) was dangerous and that the animals frequently died. Joannides and Cameron have since pointed out, however, that sodium citrate is a toxic drug and that the amounts used by Henderson and Haggard (25) were lethal to a normal dog. Three to five grams can be given at one time in the human without untoward effect, this amount representing more than is usually necessary to prevent coagulation. Dilute solutions of citrate and slow injection minimize the risk when large doses of sodium citrate are employed.

No mention has as yet been made of the use of drugs in the treatment of shock. Too many rely too much upon the value of vasomotor stimulants in the treatment of shock. It has already been pointed out, however, that the vasomotor centers and reflexes are working over time in shock and that the small peripheral vessels are constricted. Many a patient in severe shock has been sacrificed on the altar of undue reliance upon the value of adrenalin, when a saline infusion followed quickly by an adequate transfusion of blood would have turned the issue. It is to be freely admitted, however, that vaso-spastic agents will temporarily elevate the blood pressure somewhat, even though the peripheral vessels are al-

ready far more constricted than normally. The amount of blood mobilized by this slight increase in peripheral constriction does not serve to protect the vital centers from the anemia incident to the depleted blood volume in severe shock. In mild shock, however, such agents are of great value in determining whether any further procedures are necessary.

In the fall of blood pressure accompanying spinal anesthesia and that occurring after sudden removal of large quantities of fluid from the body cavities, the administration of vaso-spastic agents is urgently indicated, for in these conditions there is an actual lowering of the tone of the vessels. Here, too, the Trendelenburg posture has its greatest value. In traumatic shock elevation of the foot of the bed and the Trendelenburg posture are of little value because little blood is mobilized from the constricted peripheral vessels, and, as has already been stated, the blood is not in the venous reservoirs.

Of the vasomotor stimulants, ephedrin and pituitary extract give the most prolonged effect and are of greatest value. Adrenalin quickens the pulse and its effect on the pressure is more evanescent. Caffeine is of some value, but camphor, strychnine and ether used subcutaneously are without value. Blalock⁵ found that digitalis in shock lowered the minute cardiac output, and he concluded that its use in shock is actually harmful. It is to be remembered that the contractile power of the heart is normal in shock and that it is not in need of stimulation.

Operation, save for the effectual control of hemorrhage, should not be contemplated in shock until the effects of a lowered arterial pressure have been satisfactorily dealt with. Larrey, who was Napoleon's military surgeon, knew that it was unsafe to operate in the presence of shock but that it was permissible to interfere before the effects of the trauma were manifest. The patient in potential shock may be precipitated into a very profound state of shock by an operation that is badly timed. Local anesthesia and nitrous oxide and oxygen are the anesthetic agents of choice. Where muscular relaxation would contribute materially to the facility with which the operation may be performed (as in the abdomen) spinal anesthesia may be used with impunity granted that the shock has been adequately treated. The fall in pressure with spinal anesthesia may be obviated by the Trendelenburg posture and the use of ephedrin. When nitrous oxide inhalation anesthesia is used, as much oxygen as can be given commensurate with obtaining satisfactory analgesia should be employed.

Patients in shock tolerate oxygen lack poorly. Ethylene necessitates the administration of less oxygen than nitrous oxide anesthesia, and hence the latter is to be preferred in dealing with shocked patients. Ether is to be avoided, for prolonged ether anesthesia may precipitate shock in a normal individual; furthermore, Dale has shown that a shocked animal under ether anesthesia is ten times more sensitive to histamine than the normal. Re-enforcement of an adequate inhalation anesthesia by local procaine infiltration is not necessary in shock, as intimated by Crile. Anoci-association, a combination of local infiltration and inhalation anesthesia as advocated by Crile is an exceedingly practical manner of obtaining satisfactory analgesia in such cases.

There is no reason to believe, however, as he has suggested, that the addition of local infiltration is mandatory to obviate the transmission of painful stimuli to the anesthetized cerebral centers. An anesthetic that abolishes the transmission of motor impulses probably also anesthetizes the sensory synapses in the spinal cord. Mann³² demonstrated that a peripheral nerve may be stimulated under general anesthesia for hours without producing shock. Forbes and Miller found that the hind-limb reflex that is produced in a decerebrate dog by stimulation of the sciatic nerve was abolished under anesthesia. When electrodes were applied to the mid-brain, electrical registrations were observed on a galvanometer in the unanesthetized preparation, but disappeared under anesthesia.

Shocked patients do not tolerate prolonged operation. Contemplated operative procedures should, therefore, be executed with dispatch, but not at the sacrifice of careful hemostasis and gentle handling of tissues. The satisfactory operation of least magnitude should be chosen. Recovery after operation is not evidence that the proper operative procedure was performed. The degree of operative reaction is a better index of whether the selected operation was well adapted to the patient's condition.

Operations of necessity and not of election must be performed upon shocked patients or patients in potential shock. In the release at operation of a tourniquet applied to a mangled extremity as a first-aid hemostatic measure, it should be remembered that the subsequent fall in pressure is not due to the liberation of a toxin from the injured tissues, but to hemorrhage through leaks in the vessels of the injured extremity. Adequate hemostasis should therefore be attained before the tourniquet is released.

The evaluation of the bad-risk patient for surgery scarcely comes within the province of this paper. Such patients are, however, especially

susceptible to shock when operated upon. Anemia, infection, malignancy, inanition, fever, obesity and extremes of age are some of the conditions that constitute a bad surgical risk and predispose toward shock. Shock *per se* can, however, be combated adequately by the remedial measures already mentioned. The propensity of such patients to develop complications such as pneumonia, parotitis and phlebitis, makes their estimation as surgical risks a difficult problem and is also largely responsible for their inability to tolerate operation well.

Summary and Conclusion. The underlying cause of traumatic shock is diminution in blood volume. The local loss of blood and plasma into the injured member is synonymous with external hemorrhage in its effect upon the circulation.

The blood pressure is the most reliable guide in determining whether shock is present. A patient with a systolic blood pressure of 100 or less after severe injury is in potential shock. When the pressure is 90 or less the patient is in actual shock and energetic treatment should be instituted. At the critical level of blood pressure, 70 mm. Hg, an inadequate blood flow is afforded the vital centers, which if continued for a few hours, will terminate fatally despite energetic eleventh-hour expedients.

The rationale of treatment consists of measures that replenish the depleted blood volume. Adequate hemostasis should be secured as quickly as possible. Relief of pain, the application of external heat and the free oral administration of warm fluids are symptomatic aids of great value. In the transportation of the injured, good immobilization of fractured bones is important in order to avoid shock, or not to aggravate existing shock. Mild cases of shock respond favorably to intravenous administration of saline and the subcutaneous injection of ephedrin. There is no vasomotor exhaustion in traumatic shock; the value of vasospastic agents is limited to the treatment of mild shock and in determining whether other measures are necessary. When saline and ephedrin are inadequate to sustain the normal blood pressure, transfusion should be immediately resorted to. In the treatment of severe shock adequate replacement of the diminished blood volume is the significant factor.

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ACRODYNIA, A CASE REPORT

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GREAT FALLS, MONTANA

This case seems to me to be worthy of reporting for three reasons; first, it emphasizes the importance of focal infections in acrodynia as has been stressed, especially by Dr. F. C. Rodda of Minneapolis; second, the case shows more muscular contractions than is usual in these cases, a point which is not emphasized in the literature on this subject, and third, it is the first case of this disease reported in the State of Montana.

HISTORY:

Baby, Norma N. (No. 19142), age, 2 years, 1 month, was admitted to Montana Deaconess Hospital, Great Falls, Montana, on April 13, 1931. She was brought in because of malnutrition, anorexia, weakness, hyperhidrosis, itching of the hands and feet, and general wretchedness. The father, mother, and several brothers and sisters were living and well. There was no history of any relevant family illness of any kind. The patient was born at full-term, normal delivery, and the birth-weight was twelve pounds. She was breast fed for one year. The Mother stated that she started feeding the child some vegetables and cereals previous to age of one year, which the child apparently handled normally. No definite data could be obtained as to the weights at six or twelve months of age. During the summer of 1930, the girl was out of doors a great deal. She was in very excellent physical condition until January, 1931. The child had always eaten plenty of fresh milk and butter and an occasional egg, but had eaten no uncooked vegetables, no cod liver oil, and only small amounts of orange juice.

The patient was never sick until January, 1931, when she was suddenly seized with a very high temperature which lasted for two days. She was seen by two different physicians at that time, one of whom made a diagnosis of tonsillitis, the other of diphtheria. One throat culture taken at that time was negative for diphtheria; however the child was given two injections of anti-toxin on succeeding days. The number of units of diphtheria anti-toxin given is not known, but the child had no particular reaction following either injection.

On close questioning the mother stated that the patient had gained very little strength since the illness in January; had tired easily and walked but little. About March 10th, 1931 the parents

noted slight twitching of the muscles of the eyelids; and, to a lesser extent, the muscles of the face. The condition had remained practically stationary. Ten days ago, the hands and feet became red and slightly swollen, and the child complained very bitterly of itching of the hands and feet. The little girl would lie quietly if the parents would rub gently between the fingers and toes, and seemingly obtained a great deal of relief from this procedure. Then the child began to hold the right hand in a position of extension with the left hand clenched tightly. The toes also became flexed tightly at this time.

Physical Examination: The child was poorly nourished, the weight being twenty pounds. The rectal temperature was 101 degrees, and the pulse 140 per minute. There was lessened skin turgor with marked evidence of recent weight loss. She was apparently very miserable and whined and cried continuously. There was a slight twitching of the upper eye lids and of the cheeks. When the skin of the interspaces between the fingers and toes were rubbed, she ceased crying. The hair was scanty and dry. There were some scattered areas of almost complete alopecia in the occipital region as though the child had pulled out the hair, although no history of this could be obtained. The eye lids were kept tightly closed and there was marked photophobia; the conjunctivae were clear and the pupils reacted normally to light.

This child had sixteen teeth, all in good condition. The throat was congested; tonsils were small but cryptic and infected, grade III. There was slight cervical adenitis, principally in the posterior chain of glands. The heart and lungs were negative. Abdominal examination revealed nothing abnormal; there was no hepatic or splenic enlargement. Both hands and feet were red and the skin was indurated to approximately an inch above the wrist and ankle joints. There was no definite line of demarcation. Both hands and feet were cold to the touch, and there was marked perspiration of the reddened areas. The right hand was held quite firmly in extension, and the left hand was clenched. The toes were flexed. Both fingers and toes could be forced to normal position with apparently no pain.

Laboratory Data: The urine was normal. Examination of the blood showed a hemoglobin of 78%; erythrocytes 4,950,000; leucocytes, 14,600 with a normal differential count. Spinal puncture gave clear fluid under pressure with a cell count of four; no sugar or globulin present. The Wassermann was negative on both blood and spinal fluid. The girl was put to bed for observation and treatment.

Course: The child was given one-sixth of a grain of luminal sufficiently often to give some rest. She was also given five grains of citrated iron carbonate three times a day; and a dram of liver extract three times a day. For the first six days in the Hospital, she ran an irregular temperature varying from 99 to 102½ degrees; then the temperature dropped to normal, and general ultraviolet exposure was started with very gentle massage of the hands and feet. The patient did well in every way until May 13th, when she developed an acute infection of the tonsils, pharynx, and upper air passages. The weight, which had increased to 21½ pounds, dropped rapidly; the perspiration and reddening of the hands and feet, the wretchedness due to the itching of the hands and feet, the photophobia, the twitching of the

muscles of the upper lids and cheeks, and the contractions of the fingers and toes which had all ameliorated greatly, became very much worse. The girl's temperature again rose to 102, accompanied by anorexia and the usual findings of an acute infection. After about six days, the patient began to improve again in every way except that the contractions were much more obstinate. On June 9th, under anesthesia, following a moderate amount of manipulation of the wrists and ankles, splints were applied to the hands and feet. Tonsillectomy and adenoidectomy were also done at this time. From this date on the child's recovery was very rapid. The splints were removed on the 16th of June and regular daily massage was carried out.

The patient was discharged from the Hospital on July 23rd, 1931. The weight was 24 pounds, 10 ounces; the reddening and contractions were completely gone from the extremities; the child walked and ran all about. There were no contractions of any kind present. The twitching of the muscles of the lids and cheeks had entirely disappeared, and physical examination showed no abnormality of any kind.

IDIOPATHIC CARDIAC ENLARGEMENT IN INFANTS AND CHILDREN WITH REPORT OF A CASE

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MINNEAPOLIS

Occasional scattered reports appear in the literature from time to time describing the occurrence of enormous idiopathic enlargement of the heart in infants and children. In 1928 Stoloff¹⁷ made a survey of the literature on the subject, and found thirty-four published cases which were accompanied by pathologic reports. These thirty-four reports included certain cases in which pathological abnormalities were found in the heart, the heart muscle or in the kidneys, and others in which histologic studies were not mentioned. Stoloff concluded, therefore, that a diagnosis of true idiopathic cardiac enlargement was justified from anatomic and histologic examinations in only seventeen of the thirty-four reported cases. The condition apparently is of sufficient rarity to justify the reporting of an additional case considered to be an example of true so-called idiopathic car-

diac enlargement.

The case with which this paper is concerned occurred in a male infant who died on the eighty-fifth day of life. The child had been perfectly well until twenty-one hours before death, at which time he developed attacks of pain located apparently in the abdomen. Twelve hours before exitus the rectal temperature was found to be normal (99° F.), the pulse rate was 124, and respiration averaged 84 per minute. Throughout the day the respirations continued to be rapid and were accompanied by an expiratory grunt. Cyanosis developed which showed little variability aside from a gradual increasing intensity as time elapsed, differing thus from periodic cyanotic attacks commonly associated with pulmonary disease. Immediately preceding death, the heart rate was found to vary between 180 and 200 beats per minute, and the rectal temperature rose to 100° F.

¹⁷Read before the Jubilee Session of the North and South Dakota State Medical Associations, Aberdeen, South Dakota, June 2-3-4, 1931.

The physical examination was entirely negative except with reference to the chest. Fine moist rales were heard over a small area to the left of the precordial region, but otherwise the lungs were apparently normal. The heart attracted attention, particularly on account of the great rapidity with which it was beating. The heart sounds were faint and indistinct, but no murmurs could be heard. The impression was gained from physical examination that we were dealing with some peculiar and apparently acute cardiac condition, associated possibly with pneumonia of the left lung. X-ray examination revealed the heart to be greatly enlarged, especially to the left (Figures I and II), thus confirming the opinion gained from physical examination that the heart was the seat of the trouble in this case.

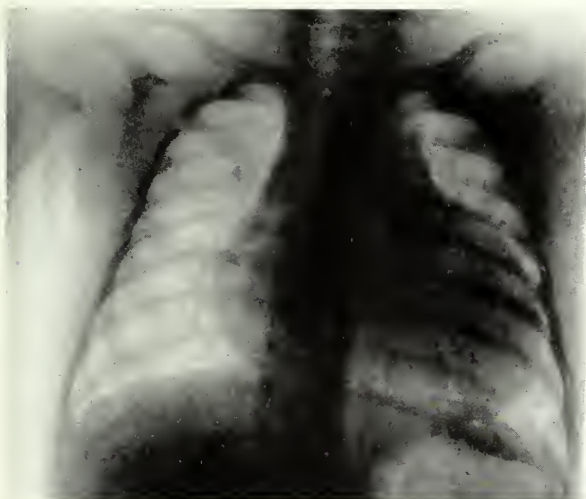


Fig. 1—Enlargement of the heart predominately to the left. X-Ray taken three hours before death.

The child died shortly, and at autopsy special note was made as to the absence of edema. The abdominal cavity and its contents were found to be normal. The diaphragm extended to the fourth intercostal space on the right, and to the fifth rib on the left. The pericardial sac contained no excess of fluid and measured 8 cm. in width, which amounted to 67 per cent of the total thoracic width (12 cm.) The heart weighed 49.1 grams as compared with a normal weight of about 24 grams for this age. The left ventricle was dilated and greatly hypertrophied, having a muscular wall measuring between 8 and 10 m.m. in thickness—about double the normal measurement (5 m.m.) The right ventricle was not dilated particularly, and was only moderately hypertrophied. The thickness of its wall measured 5 m.m. The foramen ovale was patent, measuring 1.2 cm. in diameter, and was covered

in about one-fourth of its area by a thin membrane. The ductus arteriosus was closed, and the aorta and pulmonary vessels were found to be normal. The only additional pathology found within the thorax was limited to the observation of the presence of petechial hemorrhages on the surface of each lung. The thymus was normal and weighed twelve grams. Microscopic examination revealed no pathology in the various organs of the chest and abdomen aside from evidence of hypertrophy of muscle fibers of the heart, without cellular infiltration.

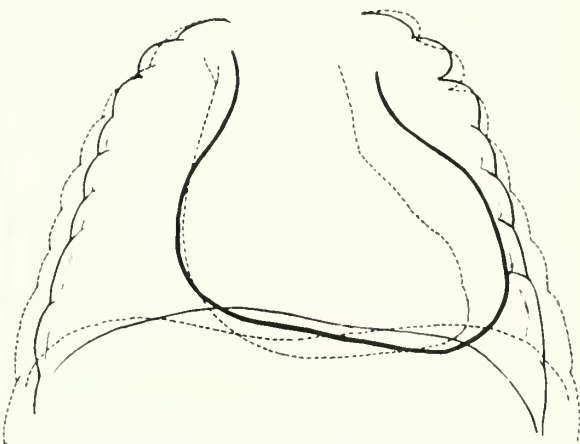


Fig. 2—Showing size of the heart in the case presented compared with that of a normal heart in a baby of the same age.

A tabulation of the data from twenty-three cases of cardiac enlargement in children is presented in Table I.

TABLE I

Showing age in months, weight of heart, estimated normal heart weight for corresponding age, per cent of enlargement and averages for 22 infants and children dying of idiopathic heart enlargement.

Case No.	Age in Months	Estimated Normal Heart Weight			Average Degree of Enlargement Per cent
		Weight of Heart (Grams)	Weight for corresponding Age* (Grams)	Degree of Enlargement Per cent	
1	New born	44.0	20.6	+114	+174
2	New born	40.0	20.6	+ 94	
3	1	55.4	21.6	+156	
4	1	127.0	21.6	+488	
5	3	49.1	24.2	+102	
6	3	66.0	24.2	+173	
7	6	62.0	29.0	+114	
7a	7	175.0	30.0	+483	+285
8	8	142.0	31.0	+358	
9	9	105.0	32.3	+225	
10	10	100.0	33.5	+199	
11	10	136.0	33.5	+306	
12	11	77.0	35.0	+120	
13	12	157.0	36.3	+333	
14	13	70.0	37.7	+ 86	

15	14	136.0	39.0	+249	
16	14	190.0	39.0	+387	
17	15	155.0	40.3	+285	
18	16	180.0	41.7	+331	
					+268
19	24	110	49.7	+121	
20	30	120	55.0	+118	
21	36	155	60.2	+157	
22	48	160	65.0	+146	
					+136
Average		117.6	39.9		+195

*Estimated normal weight determined by interpolation from data given in Abt's Pediatrics, Vol. 1, p. 946.

In each instance the case number corresponds with the reference number appearing in the list of literature cited (taken largely from Stoloff). The source from which the data were obtained thus may be easily determined. As may be seen from the data in Table I, the average degree of cardiac enlargement for the infants who died during the first six months of life amounted to an increase of 174 per cent above the estimated normal heart weight for corresponding age. The degree of hypertrophy present at the time of death varied in this age group from +94 to +488 per cent.

For the infants dying in the second half of the first year of life and the first half of the second year, the average degree of cardiac hypertrophy amounted to +285 and +268 per cent (Table I) respectively.

In general, therefore, it appears that the size of the heart at the time of death, as compared with the normal for corresponding age, averages greater in infants who die of idiopathic cardiac enlargement between 8 and 16 months of age, than in those who expire either in the first six months of life or after 18 months of age. The degree of hypertrophy present when death occurred varied greatly, ranging from +86 to

+488 per cent. In only three of the twenty-three cases tabulated was the heart hypertrophy less than +100 per cent, and the average hypertrophy for the entire group of cases listed amounted to +195 per cent. Idiopathic cardiac enlargement in infants and children, therefore, often attains a degree quite comparable with the heart enlargement noted in adults who die from cardiovascular and renal diseases.

SUMMARY

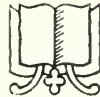
A case of idiopathic cardiac enlargement in an infant who died at 85 days of age is reported. The gross and microscopic examination of the heart was negative. At time of death the heart was 102 per cent larger than the estimated normal for corresponding age.

From a survey of 23 cases of this condition it appears that the greatest average idiopathic cardiac hypertrophy is found in infants dying between 8 and 16 months of age.

The degree of cardiac hypertrophy at the time of death in cases of idiopathic cardiac enlargement is quite comparable with that seen in adults dying of cardio-vascular and renal conditions.

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HYPERTROPHIC ANAL PAPILLAE

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Within the anal canal the union of proctodeum and hind gut is represented by the serrated mucocutaneous junction known as the dentate border. Extending upward from the dentate border may be seen from five to twelve columns of mucosa. These columns are about one-half inch in length and are obliterated when the anus is dilated. Between these longitudinal columns are grooves which at their anal end are subtended by the semilunar valves, thus forming a crypt between the two columns and the semilunar valve. These anal crypts of Morgagni are of the greatest importance, for it is due to infection arising within these crypts that a large percentage of anal pathology occurs. The serrated dentate border is then a definitely visible line formed between the anus and rectum by the semilunar valves stretching between the bases of the several columns.

This dentate appearance is accentuated by a slight elevation or pointing of the skin on the valve edges, forming the saw-tooth effect seen normally in this area. These elevations of the skin on the valve edges are known as the anal papillae. There is a gradual transition from the stratified squamous epithelium found around the external anal skin to the columnar epithelium found in the mucosa in the upper margin of the dentate line. The integument forming the lower margin of the dentate border is particularly rich in sensory nerve ends, but this distribution abruptly ends at the point where the transition to columnar epithelium occurs. No one has ever shown conclusively a function fulfilled by these crypts, valves or papillae; they are probably nothing more than the anatomical adaptation of the skin and mucosa to the changing anal diameter caused by the contracting sphincter.

The anatomy of the dentate border with its crypts and valves constitutes an ideal set-up for localized infections. When we consider the bacteria laden stools passing over these cup-shaped pockets, and the frequency with which they must sustain trauma sufficient to give the bacteria a portal of entry, it is small wonder that the quack-minded practitioner of a few years back ascribed most of the ills of the human body to anal cryptitis.

While it is a mistake to attribute many diseases distant to the rectum to anal infection, neverthe-

less, many local disease conditions are directly the result of this trouble. Most readers realize the relationship existing between anal cryptitis and fistulae in ano, ischio rectal abscesses, fissures in ano—and recently a thorough piece of work shows hemorrhoids to be due primarily to infection gaining entry by way of the anal crypts.

A condition less well understood as being secondary to anal cryptitis, is enlargement or hypertrophy of the anal papillae. These small elevations on the edge of the anal valves will, in the presence of low-grade infection in the crypt on which it borders, undergo a chronic fibro-blastic hypertrophy varying greatly in extent. This hypertrophy may involve all of the papillae present, or simply one or two of them. They vary in size from matchhead size to that of a walnut. They are usually somewhat narrower at the base, forming something of a pedicle. Being very richly endowed with sensory nerve ends, these enlarged papillae are quite sensitive. Due probably to the constant moisture they are exposed to and the constant pressor action of the sphincter, they are of a little different color than most skin, being of a slightly paler shade.

The chief significance attached to hypertrophied papillae is that they are usually mistaken for a polyp by the untrained observer. Patients are occasionally told they have a rectal polyp, and that this polyp, being a forerunner of rectal cancer, should be removed without undue delay. I have never seen a malignancy superimposed upon, or originating in a hypertrophied anal papilla. The distinguishing features are; first, that the papillae are entirely covered by skin, in contrast to the polyp which is covered by mucosa, and, secondly, that papillae are always located directly on the dentate border, whereas polypi must be at least slightly above this line. Frequently an hypertrophied papilla will be found on the internal end of an anal fissure.

Many symptoms have been attributed to hypertrophied papillae, but, in my experience, they cause no symptoms while they are small, and when they have increased in size enough to be felt they induce symptoms which can all be explained on a mechanical basis. The sensation that the rectum is incompletely emptied after stool is the most frequent complaint. Pain, usually not severe,

and pressure are felt. Hypertrophy of the sphincter ani results occasionally from spasm incited by the foreign body within the anal canal. Constipation may ensue as a result of this sphincter spasm.

The treatment of this condition offers no problem, since everyone admits that surgical removal is best advised. I believe it much better to remove these papillae under sacral anesthesia. The known dangers of spinal anesthesia, and the difficulty in obtaining anesthesia by inhalation for anal or rectal cases, make these methods inadvisable. It is usually necessary to dilate the anus slowly to the point where it will readily admit three fingers. This requirement on the anesthesia puts infiltration out of the picture.

Simply excising the hypertrophied papilla at the base and bringing the incision well outside the canal rids the patient of the pathology and leaves an anal wound which will have no overhanging edges and which will drain externally. Any bleeding points should be ligated, the wound covered with a small piece of iodoform gauze, and a soft gutta-percha drain left through the anus. This is withdrawn after forty-eight hours, and the patient is told to allow his bowels to move. Should he have difficulty in accomplishing this, a mild laxative that night, or a small oil retention enema, will produce a stool the next day. He is allowed to be up and on his feet as soon as he feels able. Occasionally catheterization is required, more frequently in male patients.

It requires from two to three weeks for such an anal wound to heal over; until it does heal, daily observation and attention to the cleanliness

of the wound is conducive to faster healing and greater postoperative comfort. Irrigating the anal canal with pure witch hazel through a specially-patterned anal irrigator helps to maintain a clean canal. Painting the wound with mild antiseptics makes for greater cleanliness, and maintaining a daily formed stool is essential to prevent the recurrence of the spasm and tightness in the sphincter. With many of these patients it is well to keep them on an anti-constipation diet in an effort to avoid all laxatives and still produce a formed daily stool.

The patient is instructed during his hospital residence how to irrigate the anal canal after each stool, using water 110° F. through an 18F catheter inserted not more than one-half inch inside the canal. I make it a practice to question these patients at each daily observation as to the condition of their bowels, and if they have not moved, insert a finger to see if there is any stool down in the rectum.

In closing let me say that when careful visual examination is substituted for guess work and assurance of the patient without adequate examination, then the intelligent treatment that is so essential can be given.

SUMMARY:

The anatomy of the anal canal explains why so much infection occurs there.

Hypertrophied anal papillae are often mistaken for rectal polypi.

They may be differentiated from rectal polypi by their constant location at the dentate border and because they are always covered by skin.

Hypertrophied anal papillae are best removed surgically with an incision brought well outside the anus.

Post operative attention to the wound and stools is essential for a good result.

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PYORRHEA AND ARTIFICIAL TEETH

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The two most prevalent diseases found in the human mouth are dental caries and pyorrhea alveolaris.

In the case of dental caries the tooth structure itself is the site of attack. It disintegrates, forming ever increasing cavities which eventually cause the loss of the tooth and result in alveolar infection.

In the case of pyorrhea alveolaris, however, the tooth is not in any way affected. These teeth when lost are in a high percentage of cases perfectly sound. The site of attack is in the membrane holding the tooth in the socket and in the

alveolar process in which the teeth are set.

There are two ways of handling a case of pyorrhea alveolaris. One, by extracting the teeth in the assumption that it is the presence of the teeth that makes the condition worse. The other is by having the patient treated by the physician and dentist in an effort to stop the progress of demineralization that is going on and is showing up in the bones of the upper and lower jaw.

Granting that pyorrhea alveolaris is a disintegration of the supporting structures of the teeth the question arises, "Does this process stop when the teeth are removed?" We have abundant

evidence that this breaking down or resorption of the bone continues and must be a factor in the loosening of dentures constructed for such patients following the extraction of their teeth.

Such being the case every effort should be made before it is too late to stop this process. Incidentally, if by so doing we save the teeth in a condition of health our service to the patient is greatly enhanced.

Owing to the seriousness of the situation so far as the patient is concerned, the greatest care should be taken by both physician and dentist to see that patients who have pyorrhea alveolaris should receive treatment that would clear up not only the mouth infection but the general physical

condition as well.

This means that when a dentist observes a case of pyorrhea he should at once have a physician see the patient for a thorough examination, and by the same token physicians should examine the mouth as part of their routine examination and when pyorrhea is evident, call in a dentist. To save one's teeth in a condition of health and comfort is a service appreciated by all.

The number of cases are all too prevalent where a pyorrhea condition has passed over, doing little more than extracting the teeth instead of recognizing the fact that the condition in the mouth was only mouth evidence of a general condition that needed treatment by the physician.

CLINICAL PATHOLOGICAL CONFERENCE

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The Department of Pathology of the University of Minnesota conducts a course in clinical pathologic conferences. Cases are selected in which a thorough clinical study has been made. Many physicians have expressed interest in this type of study and therefor the Journal-Lancet is publishing a series of these conferences. The clinical data are taken from the hospital records and are given absolutely according to the data on the record. Following the clinical report a summary of the pathologic findings is given and a few comments are made on interesting features of the case.

Autopsy—31—1502.

A white boy, 10, was admitted to hospital September 9, 1931, complaining of headache, stiff neck, and difficulty in breathing, paralysis and weakness of extremities, and pain in the back. His history was essentially negative except for a definite history of exposure to acute anterior poliomyelitis a few days prior to entrance. The child with whom he was playing died of poliomyelitis on September 8, 1931.

The patient was well up to Saturday, September 5, when he went to the State Fair where he indulged in numerous dietary indiscretions. The next day he felt fairly well but was not as active as usual and on the 7th he complained of severe frontal headache and had a fever. A physician was called at this time and prescribed for the patient, after which the headache decreased in severity. The boy stayed in bed on the 7th and on the 8th he complained of a stiff neck. He awakened on the morning of the 9th and immediately the parents noticed irregularity and difficulty in breathing. He was unable to raise any extremity from the bed and was complaining of pain in the back. There was increased difficulty in breathing until the ambulance was called on that day.

Physical examination revealed a white male child who was unable to talk. He was slightly cyanotic and there was marked respiratory difficulty. There was a suggestion of opisthotonos and retraction of the neck and all the accessory muscles of respiration were called into use. There was marked muscular weakness and quadriplegia. The respiratory paralysis became complete and he died on the day of admission. The temperature on admission

was 101°.

Spinal drainage done on the 9th revealed a clear fluid which was negative for globulin and contained 98 cells per cubic millimeter. No other laboratory work was done because of the short stay in hospital.

Postmortem report. No gross lesions of any of the organs are found. The spinal cord shows no changes on gross examination. Microscopic examination shows the typical lesions of poliomyelitis.

Autopsy—31—1574.

A white boy, 2 years old, was admitted to hospital September 20, 1931, complaining of vomiting, diarrhea, rigidity and pain in the neck, weakness, and difficulty in swallowing. The past history is without significance. He was well on the 19th but on awakening on the 20th at 3 A. M., he had a rather severe diarrhea, consisting of rather foul smelling mucous stools. The mother stated that he had a fever at this time. At noon on the 20th the neck became rigid and there seemed to be weakness of the arms and legs.

Physical examination revealed a poorly nourished child. He had generalized spasms and twitchings of the muscles and there was rigidity of the back with moderate opisthotonos. The eyes were fixed; the pupils were normal and equal in size. The breathing was labored and there was frothy fluid exuding from the mouth. The pharynx was slightly inflamed and the gag reflex was weak. Examination of the chest, heart, and abdomen revealed nothing of note. Neurologic examination revealed rigidity of the neck, positive Kernig and Brudzinski, absent triceps, biceps, and abdominal, and absent patellar on the left. At 5:45 P. M., on the day

of admission the patient's heart became irregular and the pulse thready. The cyanosis became more marked and the child expired. Examination of the spinal fluid revealed 392 cells. Other laboratory procedures not done, because of the brief hospitalization.

Postmortem report. No gross lesions of any organs are found. Microscopic sections of the medulla and upper cervical cord show typical poliomyelitis.

Autopsy—31—1647.

A white girl, age 10, was admitted to hospital September 22, 1931, complaining of difficulty in breathing and marked weakness of all extremities. The past history is without significance. She was apparently well until about the 24th of August when she developed a sore throat, stiff neck, headache, and noticed weakness of the extremities. A diagnosis of anterior poliomyelitis was made and she was taken to a hospital. The paralysis became generalized and more marked and respiratory embarrassment became evident. Shortly she was transferred to the University Hospital and placed in a Drinker's respirator where she seemed to improve somewhat. She was able to breathe outside the respirator from one to three hours. She was transferred to the present hospital September 22, where physical examination revealed a fairly well nourished white female, 10 years of age, with marked respiratory embarrassment and slight cyanosis of the finger tips and lips. The accessory respiratory muscles were being used constantly. The tonsils were cryptic and slightly enlarged; there was slight anterior cervical adenopathy. The eyes, nose, and ears showed nothing of note. The lungs, heart, and abdomen appeared to be normal. Blood pressure not recorded. Neurologic examination revealed no neck rigidity. All the tendon reflexes were absent. There was flaccid paralysis of the arms and legs. The gag reflex was present and normal. The facial muscles were active and there was no difficulty in swallowing. It was noted that there seemed to be both diaphragmatic and costal paralysis. The patient's respiratory embarrassment became progressively worse and, failing to respond to oxygen and carbon dioxide, she died at 10:15 P. M., October 2, 1931. The temperature throughout the course remained between 98° and 99°. The pulse ranged from 110 to 130. No laboratory work was done save for one urinalysis which was negative.

Postmortem report. The spinal cord shows very slight changes on gross examination; slight softening is found in the regions of the anterior horns in the lumbar cord. Microscopic examination shows lesions characteristic of anterior poliomyelitis throughout the cord.

Autopsy—31—1650.

A boy of 10 was admitted to hospital October 3, 1931, complaining of headache and pain in the knee. The past history is without significance. He was well until September 25, when he bumped his left knee on the desk

at school and this caused him a little discomfort, but he was up and about. Following this he was apparently well until September 28 when he appeared slightly drowsy. On the night of September 29 he was awakened by a severe headache and complained of a great deal of pain in the left knee. A physician, who was called, advised hot applications. The temperature at this time was 102°. From that time the patient was very restless, complained of headache, and was unable to sleep.

Physical examination revealed a well developed, well nourished boy, who was very restless and moaned continuously. The right pupil was larger than the left and they did not react to light. Examination of the chest revealed nothing of note except diaphragmatic respirations; the intercostal muscles were brought into play very little. There were no rales or increased breath sounds over the lung area. The pulse was 120. The heart was not enlarged and there were no thrills and no murmurs detected. There was a large erythematous area, about 15 cm in diameter, below the left knee and lateral to it. The knee was tender but not swollen, apparently. Neurologic examination revealed rigidity of the neck, absent knee jerks, absent Achilles', positive bilateral Kernig, negative Babinski, and absent cremasterics and abdominals.

On October 4 the patient appeared even more restless and the skin had areas of venous hypostasis. He had a great deal of mucus in his throat, which was relieved by atropine. He was given some of Dr. Rosenow's serum. He became progressively worse and died on this day, after one day in hospital.

The spinal fluid on October 3 revealed 10 cc quantity; it was clear, with 27 cells per cubic millimeter. On October 4, 15 cc of spinal fluid was obtained, which was clear and the cell count was 22. No other laboratory work was done.

Postmortem report. Microscopic examination of the medulla shows the typical lesions of anterior poliomyelitis. Lung: small areas of broncho pneumonia.

COMMENT

The preceding four cases illustrate some of the variations in the clinical picture in poliomyelitis. Respiratory paralysis develops in practically all fatal cases and in the bulbar type it may be the initial symptom. Signs of meningeal irritation usually precede the paralysis. The most important laboratory finding is an increased cell count in the spinal fluid. An increased cell count in the spinal fluid, in the absence of bacteria and associated with signs of meningeal irritation, is strongly suggestive of poliomyelitis. The diagnosis may be established in this way in the preparalytic stage. A history of exposure to another case of poliomyelitis was occasionally obtained in the recent epidemic.



This is the sixteenth of a series of articles entitled "Roentgenology and Its Various Phases," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology, at the University of Minnesota. The concluding articles will appear in each issue of The Journal-Lancet until the series is completed.

OUTLINE OF ROENTGEN DIAGNOSIS

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THE COLON

(Continued from Nov. 15 issue)

E. Colitis

1. *Muco-colitis.*
 - a. Spasticity of colon with complete but transient closure of the lumen.
 - b. Hypermotility.
 - c. Irregularity of lumen with loss of haustrations often in the descending portion.
 - d. Occasionally long, very narrow bands of density representing mucous containing barium. These must not be confused with the normal narrow caliber of the colon after evacuation.
2. *Ulcerative colitis, non-specific.*
 - a. Early extreme spasticity.
 - b. Loss of haustrations. This must be constant to be of significance.
 - c. Narrowing of the caliber of the whole colon especially the distal portion and shortening of the colon as a whole.
 - d. Loss of all markings giving a "gas-pipe" or "sausage" appearance.
 - e. Marked increase in motility with extremely rapid expulsion of the enema.
 - f. Marked irregularity representing areas of ulceration and possibly also adhesions to the wall due to peritonitis.
 - g. If air is injected by rectal tube after the injection of a small amount of barium mixture or after evacuation of the barium enema the ulcer craters themselves often made out due to the disposition of barium within them. They appear as small densities in the wall of the air filled colon.

3. *Value of x-ray examination.*

The roentgen examination is of some value in establishing the diagnosis of ulcerative colitis and determining the extent and progress of the disease. It is, however, not the most important factor in diagnosis.

F. *Tuberculosis of the Colon*

1. Usually confined to the caecum and ascending colon.
2. Increased motility, emptying taking place at 12 to 18 hours.
3. "Jumping" of the caecum after the barium meal, the meal being found in the ileum and transverse colon while the caecum and ascending colon show very little. This may be demonstrated at 6 and 12 hours.
4. Abnormal broadening of the ilcum near the caecum with presence of gas.
5. Irregularity and filling defect of the caecum shown best on enema. This changes from time to time but some defect may be present at all times.
6. Spasm of the caecum with sudden expulsion of its contents and those of the ascending colon into the transverse colon. This can be observed fluoroscopically or made out by serial films. The transverse colon will be dilated after the spasm.
7. Extreme incompetency of the ileo-caecal valve.
8. A very wide or very low ileo-caecal valve.
9. The presence of a variable filling defect in the caecum, spasm of the caecum and ascending colon with sudden expulsion of their contents, hypermotility, and "jumping" of the caecum, when all present together are quite pathognomonic of tuberculosis.
10. *Value of x-ray examination.*

The roentgen findings are by far the most important in the establishment of a diagnosis of tuberculous colitis and are quite reliable if typical. If atypical they may be simulated by a variety of comparatively simple conditions.

G. *Carcinoma of the Colon*

This tends to give the same findings as elsewhere in the gastro-intestinal tract. If the obstruction is marked the lesion can be best made out with the barium meal but otherwise the enema

is the best method of demonstration. The following findings may appear.

1. *Filling defect*—an irregular narrowing of the lumen. If the obstruction is great the enema may not pass beyond the point of the carcinoma.
2. *Dilatation of the colon* above the lesion usually present. With the enema some dilatation below may also be made out due to the pressure of the enema. Occasionally pressure on the portion of the colon distal to the tumor may occur from the tumor mass thus producing dilatation here also.
3. *Spasm*, especially in the *sigmoid*, often simulating a defect but it is transient so can be ruled out by repeated films or examinations. Occasionally spasm accompanies carcinoma but the filling defect itself should be constant.
4. *Separation of the flexures*, exposure of the whole sigmoid accomplished by rotation in order to rule out carcinoma.
5. The *caecum filled to its base* in order to rule out a small lesion here. This can be determined by passage of the barium through the ileo-caecal valve which usually indicates complete filling.
6. The *mucosal markings* usually obliterated in the area of the tumor. This may be an important differentiation from inflammatory and spastic conditions.
7. *Differentiation from tuberculosis* of the caecum difficult especially if it is the hyperplastic form of tuberculosis. The differentiating points are:
 - a. Constancy of the defect in carcinoma.
 - b. Hypomotility usually.
 - c. Lack of spasm and expulsion.
8. *Value of x-ray examination.*
The roentgen method is by far the most important method for the early demonstration of carcinoma of the colon. While it is not so accurate as in gastric malignancy, it can be relied upon in the vast majority of cases both as to negative and positive findings.

H. Diverticula of the Colon

These are similar to diverticula of the intestine, occur commonly in short, stout individuals past middle age, and are most frequent in the descending colon and sigmoid flexure.

1. *Diverticulosis*—the simple presence of diverticula gives:
 - a. Multiple small, rounded pouches or masses of barium projecting from the lumen of the colon. These are well shown with the barium enema.

- b. Retention of barium in these pouches after emptying of the colon can be shown with the barium meal.
- c. Haustral recesses separated from the colon by deep haustra must not be mistaken for diverticula.

2. *Diverticulitis.* Inflammatory process superimposed gives in addition:
 - a. Spasm, especially of the descending colon and sigmoid. These become narrow and irregular.
 - b. A "saw-tooth," extremely ragged appearance of the colon in the region of the diverticulitis.
 - c. Differentiation from carcinoma difficult especially if an inflammatory mass has appeared. The mucosal markings tend to remain intact in diverticulitis and the process is likely to be more diffuse.
3. *Value of x-ray examination.*

The roentgen method is the only one by which colonic diverticula may be demonstrated with any degree of certainty. It is therefore a most important procedure in cases suspected of this condition.

I. Colonic Fistula

Spontaneous openings into the colon may appear from adhesions to the small bowel, ulceration and penetration through, or into the stomach or jejunum following gastro-enterostomy. These can usually be best demonstrated on enema examination although they may be entirely overlooked with the barium meal.

Fistulous openings into the colon after operation can best be demonstrated by injection from without of a barium mixture and following the course of the sinus into the colon.

J. Extra-colonic Masses

The demonstration and localization of enlargements of various abdominal organs can often be accomplished by filling the colon with the enema and observing the displacement which may have taken place. This is particularly true of the retro-peritoneal masses such as kidney tumors or perinephritic abscess which displace the colon anteriorly. Pelvic masses may be demonstrated pushing the colon upward. The findings are similar to those described under secondary pressure on the stomach and small intestine.

THE GALL-BLADDER

A. Methods of Diagnosis

1. *Effect on stomach and duodenal bulb.*
Gall bladder disease may produce:

- a. Stasis in the stomach—probably rare.
 - b. Adhesions about the duodenal bulb producing deformity.
 - c. Pressure deformities of the bulb and antrum.
 - d. Irritability of the bulb.
- These are very uncertain diagnostic criteria and should not be relied upon.

2. *Films of the gall bladder region.*

Technique must be exceptionally fine in taking gall-bladder films in order to demonstrate pathology.

- a. Shadow of the gall-bladder demonstrated. This was once thought to indicate a pathological condition but it is of no importance.
- b. Shadows of calculi demonstrated. These can be shown only in 30% of the cases wherein they are actually present.

3. *The dye method.*

Sodium tetraiodophenolphthalein or sodium tetrabromphenolphthalein is given either orally or intravenously. It is excreted by the liver into the gall-bladder along with the bile and because of its iodine content will give a distinct shadow of the gall-bladder when it is normal. This is by far the most valuable method we have.

a. The oral method.

- (1) Three and one-half grams of a colloidal emulsion of the dye, or the powdered dye in keratinized capsules are given after a light evening meal. The emulsion is preferable.
- (2) No food is permitted after the evening meal and no breakfast the following morning.
- (3) Films of the gall bladder region are then made at 12 and 15 hours after the dye was given. Technique must be excellent and several areas must be covered to be certain the gall-bladder area has been included.
- (4) A meal containing considerable fat is then taken.
- (5) Two hours later, another film is made.
- (6) Frequently it is desirable to make another film 3 hours later or 20 hours after the dye is given.

b. The intravenous method.

- (1) $2\frac{1}{2}$ grams of the dye dissolved in about 40 cc. of normal saline is injected intravenously, great caution being exercised to avoid leak-

age of the dye into the tissues. The possibility of shock or a toxic reaction must be borne in mind.

- (2) The films are then taken in much the same way as in the oral method except that it is possible to take the first films within 4 to 6 hours after the injection.

c. Value of the method.

- (1) The oral method is correct in about 90% of the cases in which a positive finding is made. It is correct in about 85% of the cases in which a negative diagnosis is obtained.
- (2) The intravenous method is correct in about 95% of the cases in which a positive finding is made. The correctness of the negative diagnosis has not been well established but it is probably about the same as with the oral method.

B. *Normal Appearance of the Gall-bladder With the Dye*

1. *12-hours* after the ingestion a distinct dense shadow of the gall bladder should be obtained. This may vary a great deal in position being high under the costal margin in some and hanging low below the iliac crest in others. Usually it is pear-shaped and lies alongside the spine.
2. *15-hours* after ingestion the shadow should appear more intense and more distinct. There may be some change in position and often a change in shape.
3. *After the fatty meal* the shadow should disappear or be reduced to at most $\frac{1}{3}$ of its original size.
4. *With the intravenous* method the succession of events is much the same but the shadow is denser, approaching the density of barium in the stomach more closely.

C. *Findings in Cholecystitis*

1. *Absence of gall-bladder shadow* at any time during examination indicates a pathological gall-bladder and may be due to:
 - a. Obstruction of cystic duct from stone or inflammatory process.
 - b. So much inflammatory change that the lumen of the gall-bladder is almost or completely obliterated.
 - c. Gall bladder so full of stones that bile and dye cannot enter.
 - d. Inability of gall bladder wall to concentrate and therefore there is insufficient density of the dye to produce a shadow.

2. *Faint shadows* may appear and indicate an inability of the wall to concentrate sufficiently. This is a doubtful criterion of pathology and somewhat unreliable.
3. *Failure to empty* after a fatty meal indicates poor function of the gall-bladder wall.
4. *Failure to change shape and position* may indicate adhesions.
5. *Marked abnormality of size*, or shape may indicate either extensive adhesions or hydrops.

D. Findings in Cholelithiasis With the Dye

1. *Gall-bladder shadow* may appear but is usually faint.
2. *Negative shadows* within the shadow of the gall-bladder may be present. These are areas of lessened density usually round or square and represent the calculi, the x-ray opacity of which is less than that of the dye.
3. *Ring-like shadows* remaining after the gall-bladder has emptied itself are often characteristic. These represent the calculi coated with a layer of the dye which they may retain for many hours after the gall-bladder shadow has disappeared.
4. *Mottling* of the *gall-bladder shadow*, there being a lack of homogeneity as in the normal, is present with numerous small stones.
5. *Occasionally normal function* of the gall bladder is present with stones.

E. Sources of Error in the Dye Method

1. *Test of function.*

It must be considered that the dye method is essentially a test of gall-bladder function. It is possible to have fairly normal function in the presence of a moderate degree of pathology.

2. *Failure of capsules to dissolve.*

If keratinized capsules are used they may fail to dissolve and absorption of the dye will thus not take place. No gall-bladder shadow will then be obtained even if the gall-bladder is normal, i. e., a false positive may result. The capsules may be observed in the lower bowel if an examination of the whole abdomen is made.

3. *The emulsion* of the dye may become *insoluble* by its contact with the acid gastric juice

and thus never absorb also resulting in a false positive diagnosis.

4. *Vomiting* of the *dye* not infrequently occurs as some nausea may be produced. If the vomiting occurs shortly after ingestion all the dye may be lost in this way. This may be ruled out on inquiry.

5. *A pathological liver* modifies the test. In case of marked cirrhosis, marked passive congestion, extreme metastasis, so much interference with liver function may be present as to prevent excretion of the dye with a resultant absence of a gall-bladder shadow. This must be ruled out clinically.

6. In the presence of *jaundice* the dye is frequently not excreted, with the same result.

F. Findings in Cholelithiasis Without Dye

Gall stones have the following characteristics:

1. Shadows appear only when they are somewhat calcified.
2. Shadows are ring-like with dense periphery and clear center.
3. Rarely they may be solid densities.
4. Usually they are multiple, rectangular, faceted.
5. Change in position and arrangement may occur with change in position of the patient.
6. They must be differentiated chiefly from:
 - a. Calcifications in the costal cartilages which are usually long lines, very irregular and can be traced to the rib.
 - b. Calcified mesenteric glands which are usually more irregular in contour, more stippled in appearance, and often show widely separated shadows.
 - c. Renal calculi which are denser, more homogeneous, and can be demonstrated to be posterior or on a level with the spine, in the lateral view, while gall-stones are anterior to it. Films made in the postero-anterior position will cause renal stones to appear enlarged, hazy and blurred in outline. If the antero-posterior position is used the same effects are seen on gall-stones while the renal stones become smaller and sharper. This is an important differentiating method.

(To be concluded in the next issue)

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Great Northern Railway Surgeon's Association

The Minnesota Academy of Medicine
The Soo Railway Surgical Association
The Sioux Valley Medical Association

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UNION OF SMALL COUNTY SOCIETIES

In union there is strength, and the greater the compactness of that organization, the greater the strength. Compactness, generally speaking, is found at the center of a body and, radiating from it there is increasing looseness of structure. The result, of course, is lesser security at the periphery with greater vulnerability.

Medical organizations are subject to this same natural law, and it is equally true that the outposts may suffer from lack of cohesion. The division of members into State and County Societies is perfectly logical, and we see no need of any basic change, as this is usually practical and geographically descriptive of representation. In some cases on the frontier, however, there is lack of numerical strength, and rather than to have no meetings at all, how much better it would be if such counties combined. They would not need to lose their individual identity in such groupings as the names of all could be linked together in suitable combination.

This is by no means a new suggestion; a notable example of it may be found in northwestern Wisconsin where it has worked successfully for thirty years. The Councilors of Minnesota are giving special attention to this problem at present. We need more *organization* rather than more organizations. One living society is worth more than any number of dead ones.

A. E. H.

DR. ZINSSER—MEDICAL TEACHING— RESEARCH AND JOURNALS

Prof. Hans Zinsser, in an article on "The Next Twenty Years" in the October 23rd number of *Science*, gives a timely outlook on medical affairs, teaching and research in particular. The American Medical Association commented editorially on the article in the November seventh issue of the *Journal*. Those who missed both the address and the editorial should go back to their files and read both.

I venture to draw attention to features unmentioned by Professor Zinsser but easily deduced, namely, the types of medical meetings and medical journals that are the direct product of our present-day attitude on medical teaching and standards in the training and choice of medical teachers.

Let me also quote briefly from Dr. Zinsser: "We have developed the habit of judging men for positions by the perusal of the titles of their publications, and a list three pages long is more formidable than one of a few lines. There is also a peculiarly sensational and sentimental appeal in medical discovery . . . a hot-house forcing of medical investigation . . . a curious halo about research which has exalted it above other, and, in the absence of talent, more useful and less expensive methods of occupying time!"

He has more to say about the unwise repetition of experimentation in generously-endowed laboratories, and makes the caustic comparison with the futility of a hen sitting patiently on a boiled egg!

Well, we must not be too caustic toward the youth of the world who are willing to dedicate their resources and their energies to pursuits which, like gambling, hazard such odds. It must be granted that only a few great discoveries ever

turn up in any period, even as do winnings in games of chance. Dr. Zinsser's criticism, nevertheless, is timely and extremely stimulating. We can see that a large proportion of our medical journals exist as a medium for publication (not to say exploitation) of a great mass of investigation, good and bad, much of which resembles firmly coagulated oviparous material.

Therefore, a medical journal which does not cater particularly to that field of endeavor, but rather aims to keep the rank and file of practitioners stimulated to closer observation of their patients and aware of advances in science in general, need exist under no apology. In fact, it is true that they should, in some measure, be sufficiently endowed, so that they may carry on in their needful field of medical education without unworthy subsidies from ill-advised advertising. Excellent headway in this direction is already quite obvious; this very journal, which has so long served this group of northwestern states has always endeavored to put an island of medical thought into as limited a sea of advertising as the immediate difficulties in cost of publication would permit. It is only fair to point out the excellent place for journals of this type, and ask the medical profession to support the management in taking the murkiness out of the "sea," and establishing the "island" upon the best possible footing.

E. L. T.

THE DOCTOR MUST LOOK AT MEDICINE

The *Nation* in its issue of November 4, 1931, comments on discussions of state control of medicine and the cost of medical care at the recent Capitol Congress of the American College of Surgeons at New York City. It states that these two facts remain: "One is that in large cities doctors are all too likely to give an impression of affluence by the presence of lady doorkeepers, white-gowned secretaries, nurses and assistants; the other is that whether the fees are honestly earned or not—and in most cases, one may believe that they are—medicine costs too much for the person of moderate income. A doctor who charges ten dollars a visit per child for two children in the same family seen in the same hour need not be surprised if he is not called often; a specialist who will not consult for less than fifty dollars is a luxury to all but the high-income groups. And these are among the more moderate charges. If the medical profession is so organized that it cannot afford to sell its services for smaller fees,

then there must be a change of one sort or another."

President Angell of Yale, the only layman speaking at the Conference, is quoted as follows: "Of one thing we can be sure, and that is that in the long run, by hook or crook, society will command competent medical and nursing service adequate in amount to meet the needs of everyone. If it cannot secure this as the result of measures voluntarily devised and perfected by the profession and its interested friends, it will look to other agencies, and notably to the Government, to produce the desired results. With political methods and conditions what they are now in the United States it is difficult to contemplate such a solution without the greatest misgivings."

The public is becoming more and more aroused by this serious problem that exists in medicine today, and whether the solution shall be group clinics, health insurance, public pay clinics, like those maintained at Johns Hopkins and Cornell Universities, or state control of medicine or a continuance of the individualized medicine of today depends in a large measure on the doctor himself.

The doctor must look at medicine and study the problem in a deliberate manner, with calm and sober judgment, and without inherent prejudice so that a solution satisfactory to both the public and the doctor can be worked out, with medicine continuing to deserve the esteem it has in the past, and the greatest good for the entire public resulting.

T. Z.

A TRIBUTE TO GEORGE ROBERT ALBERTSON, M. D.

Dr. George R. Albertson, Dean of the School of Medicine, University of South Dakota, died suddenly the evening of November third at Sioux Falls, South Dakota, while attending a Masonic dance given at the Coliseum. He appeared in excellent health and spirits throughout the evening, and made no complaint of feeling ill. Death was due to a very recently-formed thrombus involving the left middle cerebral artery and a portion of the left common carotid artery.

Dr. Albertson was born in Moline, Illinois, December 24, 1886. He was reared, and graduated from the high school in the city of his birth. He graduated in medicine in 1910 and received his M. S. degree in 1912. He served his alma mater in the capacity of assistant demonstrator of anatomy while pursuing work leading to the M. S. degree. On September 8, 1910, he

was married to Masie Kracke of Moline, Illinois. In 1912 he came to the School of Medicine of the University of South Dakota as professor of anatomy, succeeding Dr. H. E. French who had been called to a similar post in North Dakota. In 1916 he received his A. B. degree from the University of South Dakota. Following the death of C. P. Lommen, Dean of the School of Medicine, Dr. Albertson was appointed to fill the vacancy thus created.

Dr. Albertson was a member of the Yankton District, State, and Sioux Valley Medical Associations, and was past president of the district society. He was prominent in the activities of the Masonic Blue Lodge, Knights Templar, and various other Masonic orders. He belonged to the Nu Sigma Nu and Alpha Tau Omega national fraternities. Though not a church member he sang in the Methodist church choir during his residence in Vermillion. He was particularly fond of good music.

He was actively interested in the progress of the community in which he lived and gave freely of his time to further its development. It was almost entirely through his intelligent direction that machinery was put in motion toward the erection of a community hospital at Vermillion, a project not yet consummated at the time of his death. He was a citizen of the best type, respected by all. As a teacher in the various branches of anatomy he was outstanding; as Dean of the School of Medicine, he demonstrated unusual merits as an administrator; as a physician, he was unswerving in his loyal acceptance and maintenance of the high ideals upon which the profession is founded, and was frankly critical of anyone whose activities in any way tended to lower those standards.

Dr. Albertson's contact with medical men everywhere inspired confidence in his ability, and admiration and deep respect for the man and physician. In the School of Medicine he carried his high ideals into the classroom and inspired his students with a zeal and scientific enthusiasm which has carried many of them on to greater attainments. Exacting to a high degree himself, he expected and won similar activity from his students and faculty members alike. His plans for the future development of the School of Medicine, known only to a few intimates in whom he had confidence, were based upon sound judgment and a rare vision of future needs. Though he had but few intimates, his friendship was genuine and abiding and was highly prized by

those who knew him best. Ruggedly honest himself, he detested hypocrisy in others.

His passing brings a sense of great loss to his family, the community, former students, faculty and other associates, the medical profession of the State, and to the School of Medicine. To those of us especially favored with Dr. Albertson's friendship, his loss seems irreparable.

A good man, an upstanding citizen, an able administrator, a truly great teacher, an affectionate husband and father, a genuine, sympathetic, understanding friend has ventured into the everlasting beyond. "May his work and his spirit continue to aid us in the future as they have in the past."

J. C. OHLMACHER, M. D.

TUBERCULOSIS SYMPOSIUM

In observance of the 10th anniversary of the founding of Lymanhurst School for tuberculous children and the 25th anniversary of the Christmas Seal campaign, a tuberculosis symposium will be conducted December 2nd, at 6:30 P. M., at the Nicollet Hotel, with the Lymanhurst medical staff, the Hennepin County Tuberculosis Association and the Minnesota Public Health Association as sponsors.

Since its beginning thirteen thousand Minneapolis school children have been under observation at Lymanhurst School, founded to place a protecting arm around the tuberculous child. The tenth annual report of Lymanhurst School, by Dr. J. A. Myers, chief of the staff, will be one of the outstanding features of the program.

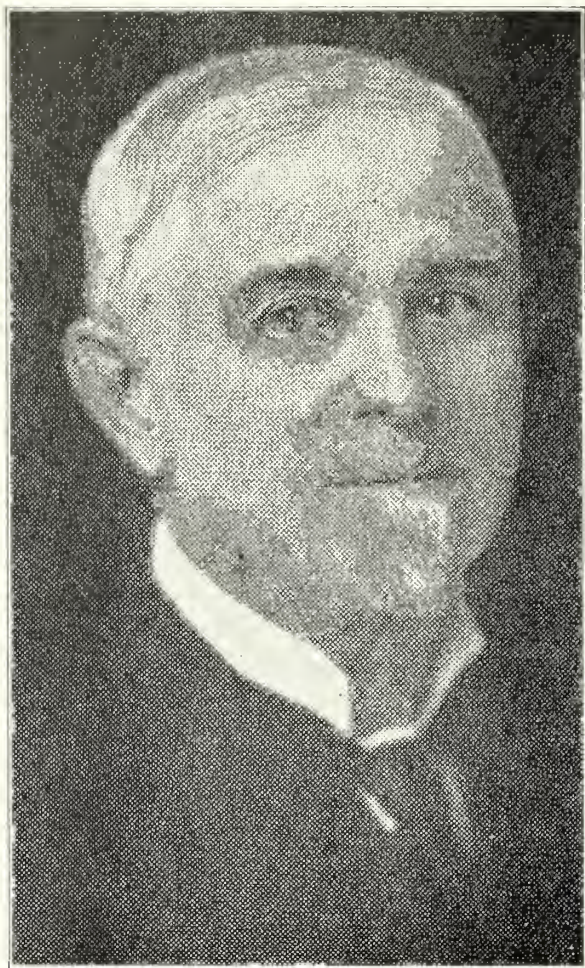
"During the decade of Lymanhurst's existence as a day school for tuberculous children, where rest and food are part of the daily curriculum, the death rate for the group between the ages of 10 to 19 has decreased 50 per cent in Minneapolis," Dr. N. O. Pearce, president of the Hennepin County Tuberculosis Association, said. "Lymanhurst can claim at least a part in this achievement, for the Minneapolis death rate for this group is 37.1 per cent lower than that of the rest of the country."

Dr. O. E. Lochen, of Duluth, a member of the Minnesota Public Health Association, will review the progress in fighting tuberculosis over a quarter of a century in Minnesota. His subject will be "Twenty-five Years of Christmas Seals."

Other speakers will include Dr. W. P. Shepard, of New York; Dr. H. Longstreet Taylor, of St. Paul, and Mrs. Blanche LaDu, of the State Board of Control. Dr. F. E. Harrington, Minneapolis Health Commissioner, will preside.

Two hundred and fifty invitations to members and friends of the three sponsoring organizations have been sent out, but reservations may be made by all interested persons any time before the date of the meeting.

HEZEKIAH JOHN ROWE, M.D.



We are again called upon to record the passing of a pioneer physician and to pay our tribute of respect to his memory.

Dr. H. J. Rowe was born in Pennsylvania, March 7th, 1848, and died at his home in Minneapolis, November 20, 1931. At the age of seventeen he enlisted as a private in the Civil War and at its finish began the study that prepared him for his day's work. He graduated from Jefferson Medical College, Philadelphia, Pennsylvania, in 1876, and began the practice of his profession at Londonville, Ohio.

In the spirit of high endeavor he answered the Call of the West and settled in Casselton, North Dakota, in 1879, where he practiced his chosen profession for forty consecutive years. During this time, in addition to his work as a physician, he gave the community constructive leadership in solving the many problems confronting a new country. In addition to filling various positions

of trust and responsibility, of a more or less local nature, he had the honor of being elected for two consecutive terms as State Senator from the Tenth Legislative District and the distinction of having introduced the first bill in the North Dakota State Senate.

In 1901 he was elected president of the North Dakota Medical Association and presided at the session held the following year at Fargo. From 1905 until 1924 he was its secretary, and to his splendid qualities of mind, and heart, much of its success is due. His ability as an administrator was recognized in his appointment as Commandant of the Soldiers' Home at Lisbon, North Dakota, which position he held for four consecutive years. After this service he retired to Minneapolis where he resided until the time of his death.

As the events of the World War were wafted on the breeze, vivid memories of the Sixties came back to him, the yearning pulse of action beat more strongly in his veins and he again offered himself to his country to serve in whatever capacity he was most needed. He did valiant service in localities where resident physicians had left for the front.

In Masonry and Oddfellowship he was an acknowledged authority. The genial flow of his social qualities coupled with his fine sense of the proprieties fitted him for leadership in these as well as other activities.

Dr. Rowe was married in 1880 to Miss Helen Taylor of Londonville, Ohio. From this union two sons survive, Arthur T. Rowe and Paul H. Rowe, the former a professor of dentistry at Columbia University, New York City, and the latter a physician in Minot, North Dakota. A second marriage to Miss Rose Messner was consummated in 1909.

Dr. Rowe was the Marshal Ney of the Rear Guard of that masterful body of men who came as pioneers in the full flush of young manhood to battle with the foes of life on the prairies of the West. As a physician he was a peer among his fellows; as a citizen he was loyal, law abiding, public spirited, and ever ready to defend his country from enemies without or foes within; as a friend and associate, he was frank, affable and just. In his daily walk and conversation, in his intercourse with the public, and in his family and social relationships, he was accounted a consistent christian gentleman—and what better can be said of any man?

JAMES GRASSICK, M.D.

NEWS ITEMS AND HEALTH ACTIVITIES OF NORTH DAKOTA STATE DEPARTMENT OF HEALTH

A. A. Whittemore, M.D., State Health Officer, Bismarck, N. D.

Viletta Roche, Editor-in-Chief, Director of Bureau of Vital Statistics, Bismarck, N. D.

Deaths In State Institutions

The State Department of Health has completed a tabulation of deaths in State Institutions comprising the period 1920-1930 inclusive. Two of the State Institutions, the School for the Deaf at Devils Lake and the School for the Blind at Bathgate have had no deaths in the past eleven years. The State Training School at Mandan has had but eight deaths in this period and the penitentiary only eighteen. The School for the Feeble Minded registers 193 deaths. Of the 369 deaths recorded for the Tuberculosis Sanitarium at Dunseith, 360 give the cause of death as some form of Tuberculosis. The State Hospital for the Insane at Jamestown has 971 deaths for this eleven year period. Of these, 152 give Tuberculosis as the cause, 25 syphilis, 20 cancer, 159 cerebral hemorrhage, 111 heart diseases, 13 suicides, 13 accidental deaths, 33 nephritis, 71 pneumonia, 30 senility, and so on. Practically all of the International Causes of Death are represented at this institution.

Billings County

A two-months nursing service was completed in Billings County, November first, by the Health Department. This county has no resident physician and only two villages, Medora and Fryburg. Inspection of all school children was agreed upon as the program and classes in Home Hygiene and Care of the Sick were offered to high school girls and all women interested. Billings County has only one highway from east to west and one out of Stark County north and south. The Bad Lands roads are very poor, with few bridges up and down the river. To visit one school, it is necessary to cross the Little Missouri eight times by fording it. Distances to the schools are great and in some places home calls cannot be made by car. The population is mainly Ukrainian and Russian. Health education is slow and must be conducted through an interpreter. Extreme poverty has become habitual. An Americanization and social service program could be worked out to advantage in this entire county. Dr. Gumper of Belfield Health Officer of Stark County, also acts water at the school was the only common source of water, milk or food supplies to all of these children. Elimination of all possible sources of infection of the disease, isolation of patients and community-wide immunization against the disease has been effected.

1931 Births

Every physician in the State will shortly receive a letter from the Health Department asking for 1931 birth certificates. At the present writing, the number of births for the first 10 months of 1931 has fallen far short of the expected quota, according to the number of certificates filed with the Department. Our 1931 birth registration campaign will soon be in full swing and we ask your co-operation. When your letter reaches you, kindly give it your earnest consideration.

Queries

A year ago we were sending out approximately

as Health Officer for Billings County and is giving professional services gratis to the destitute.

Immunization

Approximately 6,000 school children in the drouth area have received their first dose of diphtheria immunization. Diphtheria toxoid is quite popular with the Medical Directors and is used in about one-half of the cases. The whole drouth area project is very successful,—in fact the demand for our services is far beyond our expectations or facilities.

Hospital Births and Deaths

Answering numerous requests for information as to the number of hospital births and deaths in 1930, we are pleased to give the following information:

Of the 14,639 births recorded for 1930, 3,839 occurred in hospitals and an additional 105 at the Florence Crittenton Home and House of Mercy. 12,681 births were attended by physicians, 1082 by midwives and 876 by others.

Of the 5331 deaths in 1930, 1308 occurred in hospitals, 53 in Old Peoples Homes, 42 at the Sanitarium at Dunseith and 126 in other State Institutions. There were 414 accidental deaths,—an increase of 62 over 1929.

Typhoid at Sanborn

An outbreak of Typhoid Fever at Sanborn, Barnes County, was recently investigated by the Department. Twelve cases were involved, six being in one family. Diagnosis was confirmed by laboratory examination in nine cases. Two cases, although clinically typhoid fever, failed to yield a positive laboratory report. The first case of the entire group proved fatal and no laboratory confirmation of the diagnosis was had, but necropsy reports from the University of North Dakota confirmed the diagnosis.

The source of infection was quite definitely traced to polluted drinking water. Nine of the patients were school children and all gave history of onset from 18 to 22 days following reopening of the Sanborn Public School, which they all attended. The drinking 1,200 queries each month for missing information on birth and death certificates. We are glad to report that we now send out between 600 and 700 per month,—which means (1) that certificates are more complete when sent in; (2) that our requests for complete records have been received in a kindly manner and splendid co-operation is being given us in this respect; (3) that the time formerly employed by our office in completing certificates can now be utilized in other directions and will enable us to give better service to the public. We do hereby express our gratitude and appreciation and make the glad prophesy that queries may soon be practically eliminated from our correspondence. Many physicians and registrars are calling at the Department this year and after being shown around have a clearer conception of the extent of our work and a better understanding of its value. Invariably surprise is expressed at the amount of material available. Come and see for yourself.

ABSTRACT
PHASES AND TREATMENT OF TUBERCULOSIS
OF THE EYE FROM THE MODERN
VIEWPOINT

*A. Von Szily—Univ. Augenklinik. (Munster I. W.)
Z. Tbk. 58-315-328. (1930.) Abstr. Werner Rab.
(Berlin.) Translated by John C. Lamont, M. D.
Nopeming Sanatorium, Nopeming, Minnesota*

The significance of tuberculosis to diseases of the eye was first recognized at a comparatively late period. It was contended in the eighth decade of the nineteenth century that the eye is immune to the tuberculous process, although the relationship of the eye to syphilis had been known for a long time. This was believed true, whether or not the interior of the eye was infected during progressive phthisis, surgical tuberculosis or lupus.

Today England and America concede only to focal infection a greater importance than to tuberculosis in the origin of obscure eye diseases. The shift has been away from lues. The scope of tuberculosis eye diseases has widened; their number has notably increased. Betterment of diagnostic methods; demonstration of tubercle-formation and caseation; animal research.

The bacilli (human and bovine) reach the eye from the blood-stream by endogenous metastases, re-infection, or through local spread, whether by contiguity or bacillary migration (of tuberculous material) from the walls of the eyeball to its interior, or by colonization to other parts. The "flecky precipitate" has been considered "wandering tubercles."

The clinical classification is patterned according to Ranke and should not be too rigidly considered. Next to infection, predisposition plays a part in allergy. Then the benign-proliferative and the malignant-exudative forms are to be distinguished. Non-specific factors are to be evaluated.

Age: (childhood, puberty, menopause.) General diseases with much dyscrasia. Disturbances of metabolism in old age and pregnancy. In the latter condition, one must weigh the question of artificial abortion in the serious blindness following grave tuberculosis of the eye.

Symptomatology:

Scrofulous inflammation of the eye in children (with phlyctenulae) is a phase of tuberculous infection. It is not today the specially disputed question whether tuberculosis or some specific constitutional anomaly is the basis of the clinical picture, but only how far an especial disposition must exist in order that the tuberculous infection may show itself in this form, and how much is of bacillary, and how much of tuberculo-toxic origin. The "tuberculous phlyctenulae" would have an especial tuberculous allergy as a hypothesis."

Puberty quiets scrofula and releases the role of seborrhoea. Late scrofula is infrequent (easily confused with Rosacea).

Scrofula of the eye belongs to Ranke's second stage, primary lesions being very unusual. Also Uveal Tuberculosis (unilateral) threatening loss of the eye occurs early in children. Scrofula immunizes against later tuberculosis within the eyeball.

Keratitis parenchymatosa belongs also to the secondary stage, as do tuberculosis of the ciliary body and iris,

and choroiditis disseminata. Important in adolescence is tuberculous periphlebitis of the retina, and also tuberculosis of the optic nerve.

Diagnosis:

Minute examination of the whole body, radiography of the thorax, sedimentation tests, etc. Nevertheless, on account of the antagonism between lung findings and eye pathology, the conclusions of the internist are not always what are expected.

Therapy:

There is wide diversity of opinion especially as touching the question of tuberculin.

1. DOSAGE. The instructions are too stiff and schematic. There should be individualization. Purposeful treatment with cautiously stepped-up dosage and with an aim to fortify against tuberculo-toxicity already present. Immunity against tuberculin is not the same thing as immunization against tuberculosis. The latter can not be attained through tuberculin treatment.

2. PREPARATIONS. Ophthalmologists have heretofore preferred Koch's old tuberculin, new-tuberculin bacillus-emulsion, and, recently, teleprotin. They tend to avoid Friedman's remedy. We are warned of too severe reactions that have occurred from 1/1000 m. g. of old tuberculin. The useful local reaction should not be overdone. In eye tuberculosis, we must differentiate the "tuberculin-indicated" cases, from the "contra indicated": to the latter belong the highly-allergic exudative type of the "over sensitization epoch."

Of importance is the development of an unspecific natural resistance through climatic factors, high-vitamin food, etc. Betterment of environment (Sanatoriums for eye tuberculosis).

Partenteral Reizkorper therapy (see statement in the appendix to the work of Von Por and Herman Freund): toxic effects through the capillaries may lead to later results, which we are not yet in a position to estimate. Heliotherapy and surgical procedures are merely mentioned.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. E. V. Stone, Minot, N. D., was recently married to Miss Anne Espeseth of Towner, N. D.

Dr. V. G. Allen is now permanently located at Rugby, N. D., and will continue his general practice.

Dr. J. A. Roy, Red Lake Falls, Minn., was elected mayor of that city at the November election.

Dr. C. D. Owston, formerly at Duluth, has opened offices for general practice at Walhalla, N. D.

Miss Gladis Fremouw, Cloquet, Minn., has been appointed a second lieutenant in the army nursing corps at the Walter Reed General Hospital, Washington, D. C.

Dr. C. E. McReynolds, formerly in practice at Wyndmere, N. D., has moved to Fredonia, N. D.

Dr. M. L. Mayland, Faribault, has been named County Coroner to succeed the late Dr. W. H. Robilliard.

Dr. S. S. Blacklock, Hibbing, Minn., was recently married to Mrs. Edna Wichgar, of Cincinnati, Ohio.

Dr. V. T. DeVault, Baltimore, Md., has become associated with Dr. L. B. Dochterman, Williston, N. D., in general practice.

Dr. L. D. Whitney, who has been located at Aberdeen, has moved to Brookings, S. D., and opened offices for general practice.

Dr. E. C. Smith, Springfield, S. D., has returned to his old home at Mission, S. D., and has again opened his offices for medical practice.

Dr. J. A. Pratt, Minneapolis, was the principal speaker at a large gathering of the Fergus Falls, Minn., physicians at their club rooms last month.

Dr. Everett K. Geer, St. Paul, was the guest speaker at the monthly meeting of the Washington County Medical Society held at Stillwater last month.

Dr. K. A. Danielson, Litchfield, Minn., has been named resident surgeon for the Great Northern Railway Co. He succeeds the late Dr. A. W. Robertson.

Dr. Morris Greenberg has opened offices for general practice at Robbinsdale, Minn. The doctor is a recent graduate of the University of Minnesota.

Dr. Charles S. Langley, who was for several years in active practice at Lake Andes, S. D., died recently in Seattle where he resided for the past year.

Dr. Mabel Ulrich gave a very interesting talk on "Books" before the Woman's Auxiliary of the Hennepin County Medical Society at their last monthly meeting.

A quarter century of service as a Regent of the University of Minnesota will be completed by Dr. William J. Mayo, Rochester, with the close of the year 1931.

The Deaconess Hospital, Havre, Mont., have elected the following officers: Dr. F. W. Briggs, president; Dr. J. S. Almas, vice president; Dr. Wm. Lacey, secretary.

Dr. Charles H. Mayo, Rochester, Minn., was the principal speaker at a father and son dinner of the Men's club of the House of Hope church, St. Paul, last month.

Dr. W. E. Richardson, who has been prominently identified with the medical profession at Pipestone, Minn., for the past twelve years, has decided to locate at Phillip, S. D.

Dr. Paul L. Greene, Livingston, Mont., has been spending several weeks in New York and Boston visiting the different clinics and making a special study of "Bone Work."

Dr. J. A. MacDonald, Cando, N. D., was seriously injured while out duck shooting last month. His gun was accidentally discharged, the full contents becoming lodged in his ankle.

Dr. C. M. Robilliard, Faribault, Minn., has been appointed physician for the Minnesota School for the Deaf and Dumb, to succeed his father, the late Dr. W. H. Robilliard.

One of the rooms at the new City Hospital at Owatonna, Minn., will be furnished in memory of the late Dr. F. M. Smersh, for many years one of the leading physicians of that city.

Dr. Frederick Barrett, Gilbert, Minn., died suddenly of heart trouble November 5th, at the age of 56 years. Dr. Barrett had served as mayor of his home city for the past 17 years.

Dr. Arthur M. Lasseh, of the Northwestern University Medical School, will temporarily fill the position left vacant by the death of Dr. G. R. Albertson at the University of South Dakota.

Dr. Leon G. Smith, Montevideo, Minn., was elected a Fellow of the American College of Surgeons at the last annual meeting held in New York City. Dr. Smith was in attendance at the meeting.

Drs. A. C. Strachauer and R. R. Cranmer, Minneapolis, were guest speakers at the November meeting of the Scott-Carver Medical Society held at New Prague, Minn., on November 10th.

The Montana State Board of Nurses' Examiners at their recent meeting held at Helena, granted diplomas to nearly 100 young lady nurses who had just passed a very creditable examination.

Dr. L. A. Sukeforth, in charge of the public health department at Duluth for the past eight years, has resigned. The vacancy will be filled by a committee named by the St. Louis County Medical Society.

Drs. N. O. Ramstad and L. W. Larson, Bismarck, were guest speakers at the monthly meeting of the Sheyenne Valley Medical Society at Valley City, N. D., last month. The attendance was the largest of the season.

Dr. D. D. Murray, Duluth, passed away last month after an active practice in that city during the past 40 years. He was an active worker in professional, civic and political life, and many people of high and low estate will sadly miss him.

Dr. Frederick M. Gibson, a member of the University of Minnesota Medical School Faculty for the past 28 years, died at his Minneapolis home last month. Dr. Gibson was 75 years of age and a graduate of the University of Michigan.

The regular November meeting of the Northwestern District Medical Society, was held at Minot, N. D., on the evening of November 12th with Dr. Walter R. Johnson, of the Mayo Clinics, presenting a paper on "Differential Diagnosis of Jaundice."

Dr. J. T. O'Brien, well known and popular physician, passed away suddenly from a heart attack at his home in Wahpeton, N. D., last month. Dr. O'Brien had been in practice in North Dakota for nearly 50 years and had been an active worker in the state and county medical societies.

Dr. R. N. Palmer, who has been in active practice at Lanesboro, Minn., for many years, but recently had moved to Kenyon, Minn., died last month, after a short illness. Dr. Palmer was only 38 years of age and a graduate of the University of Minnesota.

Dr. F. E. Harrington, Minneapolis city health commissioner, has been promoted to the rank of senior surgeon in the United States public health service. He was named by order of President Hoover. His new rank corresponds to that of lieutenant colonel.

Dr. E. J. Chesley, head of the Minnesota State Board of Health, has issued a warning to hunters to beware of tularemia, or "rabbit fever," this year. He advised wearing rubber gloves while handling dead rabbits and the washing of hands thoroughly in hot water immediately afterwards.

Dr. H. J. Rowe, Minneapolis, died on November 20th at the age of 83 years. Dr. Rowe was one of the pioneer physicians of North Dakota, being secretary of the State Medical Society for twenty years and associate editor of the Journal-

Lancet for ten years. His former residence was Casselton, but on retiring from practice, he moved to Minneapolis.

The regular meeting of the District Medical society was held at Sioux Falls on Nov. 9th, with the largest attendance of the season. The speaker was Dr. J. A. Myers, professor of preventive medicine at the University of Minnesota and editor of the Journal-Lancet. Dr. Myers is an authority on tuberculosis and spoke on the subject "Some Newer Developments in the First of Tuberculosis."

Dr. Paul H. Fesler, superintendent of the University Hospital, makes the following suggestions: "This is to respectfully request that patients are not sent to the University Hospital unless the hospital has been called by you and the hospital has agreed to accept the patient. Lately, some of the doctors have been sending patients in without such notice. This, of course, is unfair to patients. The hospital is crowded and is unable to accept patients unless we know they are coming. In fairness to the patient, we request that you comply with our wishes in this matter."

The regular November meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, St. Paul, with the following program being presented: Thesis, "The Importance of Hepatomegaly and Splenomegaly in Differential Diagnosis," Dr. Moses Barron. Case Reports, "Acute Abdomen Complicating Pregnancy," Dr. A. E. Wilcox. The officers are: President, Dr. James Gilfillan; Vice-president, Dr. J. C. Litzenberg; Secretary-Treasurer, Dr. R. T. LaVake; Executive Committee, Dr. John E. Hynes, Chairman, Dr. C. N. McCloud, Dr. Emil S. Geist.

George F. Sjoden, a licensed chiropractor with an office at Kensington, Minn., was sentenced to six months at hard labor in the County Jail of Douglas County for practicing medicine without a license. The defendant formerly practiced at Princeton and Motley. He has been prescribing medicine and attempting to remove tonsils. After having the Medical Practice Act and the Chiropractic Law very carefully explained to him, the Judge suspended the sentence on condition that he pay the costs of the prosecution, and that he refrain from practicing medicine in the future.

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TOXEMIA OF PREGNANCY*

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There are many manifestations of toxemia of pregnancy, but I will limit this discussion to two types only: namely, the pernicious vomiting of pregnancy and the toxemias which lead to, or which precede, at least, eclampsia.

Only when we know the etiology of a disease, is a perfected treatment possible. In none of the toxemias do we know the etiology. Therefore, our treatment is inevitably empirical, but, nevertheless, with our chemical studies and with keen clinical observation we have made some progress.

In the last five or six years our ideas about these two toxemias have changed considerably. The pernicious vomiting of pregnancy has the earmarks of a toxin etiology, but there is still some doubt that all of the hyperemeses are really toxic.

Formerly hyperemesis gravidarum was classified etiologically as neurotic, a reflex, and toxic. We are now minimizing the idea of the reflex causes in the pelvis.

The hyperemesis gravidarum usually begins as a simple vomiting, and if it be of a toxic type, in spite of treatment, it keeps on increasing. That shows how we have to depend upon empirical methods, so that our diagnosis of a toxic vomiting is often made simply because our treatment failed. The modern treatment is chiefly hygienic. In the two types that we now recognize, the neurotic and the toxic, the treatment varies.

Our treatment in these cases is: put them to bed, give large quantities of fluid in the form of five per cent glucose in normal salt solution per rectum for the dehydration and for the starvation. I am a little bit doubtful about the necessity of using sodium bicarbonate to combat the acidosis. I think the glucose solution is much better. And treat these patients with large doses of suggestion on the supposition that most cases are chiefly neurotic in origin. I also give sixty grains of sodium bromide in the above solution every four hours by enema until the woman quits vomiting, which usually occurs in a very short time—twenty-four to forty-eight hours.

The glucose may need to be given by vein, if prompt improvement does not follow its use per rectum.

If the woman does not respond to this treatment of sufficient fluids in the form of glucose solution, it is unwise to persist over too long a time because that case then is toxic.

The treatment for the real toxic vomiting of pregnancy is emptying the uterus at once. This will not often be necessary for nearly all cases respond to the rest, fluid and glucose treatment, especially when accompanied by "large doses of suggestion."

Up to this time we have called all of the toxemias which precede or occur before an eclampsia, pre-eclamptic toxemia, but we have suspected for some time that there is more than one toxemia with which we are dealing.

*Read before the jubilee session of the North and South Dakota State Medical Association, Aberdeen, South Dakota, June 2, 3, 4, 1931.

The three types that we recognize are: first, true nephritis; second, the low reserve kidney; and third, pre-eclampsia. Low reserve kidney is not a satisfactory term from the standpoint of recent progress in our knowledge of kidney diseases. But for want of a better, it expresses the idea of a condition which is but incompletely understood.

The low reserve kidney has the earmarks of a toxemia; it is more common than a true nephritis, and the blood chemistry and the urine examinations differ from that of a true nephritis. At first the woman may have no marked subjective symptoms, perhaps only a little headache and malaise. She isn't very ill, but danger threatens. The important thing in handling these cases is early recognition to prevent future trouble. This is the type that would be missed entirely if routine examinations of the blood pressure and urine were not done before delivery.

Prenatal care is the sheet-anchor upon which we must depend for holding our ship in its course and off the rocks of eclampsia. The blood pressure in this type of kidney is only moderately elevated, 160, 170, 180. The albumin and casts are very low, but there is an increase of weight due to occult edema.

In the pre-natal care one of the most important things is to weigh your patient every time she comes in, because this often reveals an occult edema. The weight increases and you don't understand why. There is fluid in the tissues before it has begun to come to the surface or show itself as an observable edema, and we can often early detect a kidney of this type by taking the weight of the patient every time she comes in. The etiology is unknown; the treatment is rest in bed and low protein diet, and the condition disappears very soon after delivery; it is hardly ever necessary to empty the uterus.

Nephritic toxemia. This is nephritis complicating pregnancy. We can almost always diagnose it by the fact that the woman gives a history of nephritis. However, some women with a nephritis have the symptoms appear for the first time during pregnancy, and there are occasional cases that recur with each pregnancy and apparently disappear in the meantime. Such cases are not very common, but are just enough to keep us confused and on our guard.

Next to syphilis, nephritis is the commonest cause of repeated premature labors and stillbirths. We have not done our whole duty in watching these women before delivery in order to detect the earlier stages of a nephritis, but we must follow them up constantly, even for years. The nephritis

is always worse after every pregnancy, inevitably hastening death. The immediate prognosis of a woman with a nephritis complicating pregnancy is good; that is, as to her life, but the remote prognosis in her case is very bad because her nephritis is made worse. The immediate prognosis of the baby is not good for the reason that the placenta is diseased. We often find a very large number of infarcts in the placenta, which may be so much destroyed that there is not enough placenta left to maintain nourishment of the baby.

The treatment of the mild cases is often conservative. In the severe cases it will often be necessary to interrupt the pregnancy. A future pregnancy should be absolutely interdicted.

We have a term formerly including all these pre-eclamptic toxemias which we call "pre-eclampsia," but which we now look upon as a rather definite entity, and which, if neglected, inevitably terminates in eclampsia. Some of these other types, like the low reserve kidney, do not terminate in eclampsia as does pre-eclampsia; neither does the nephritic type of case, although one may have the same convulsions that any nephritic might have. It is simply a more severe toxemia, and the blood chemistry changes in the low reserve kidney are minimal, while in nephritis they are maximal.

In pre-eclampsia, as we now understand the term, without treatment, the disease, inevitably leads to eclampsia. The albumin and the blood pressure are much greater than in the low reserve kidney.

If we can distinguish the pre-eclampsia from the low reserve kidney and from the nephritic kidney—and we can in most cases—we have done our best service to the pregnant woman, because we have detected the disease which, if allowed to continue will become eclampsia; therefore, prophylaxis is the most important treatment.

As soon as a toxemia is diagnosed, the woman must be put to bed, preferably, in the hospital, the blood pressure taken daily or oftener, and the intake and output of fluid taken daily. Measure the output of urine and examine daily because if the amount of fluid excreted or the amount of the albumin increases, induction of labor may be necessary. The blood chemistry must be taken frequently. Low protein diet, even a milk diet, is advisable with large amounts of fluid with saline cathartics. In low reserve kidney improvement is usually prompt, and in pre-eclampsia, improvement may occur.

If, in spite of this treatment, the symptoms increase, then induce labor because eclampsia is

inevitable. By inducing labor promptly in cases which show no improvement, you will prevent, in almost all cases, the attacks of eclampsia. If the woman is in labor and shows these marked symptoms, use the Stroganoff or magnesium sulphate methods of treatment. If convulsions seem imminent, this is the time for venesection. If you are going to do a venesection, take plenty of blood. To take out a little blood; 300 or 400 c.c. is of absolutely no use; take out from 500 to 1,000 c.c. according to the size and weight of your patient.

Caesarian section may sometimes be justifiable in the bad toxemias in order to prevent eclampsia, but it is very seldom necessary.

Eclampsia is almost always preventable, but we have a type of this pre-eclamptic toxemia which is so fulminant that it really does come on over night. I have seen women who were perfectly healthy in every way, with no albumin, no elevation of blood pressure one day, who, two days later, had a violent attack of eclampsia, but those cases are not very common.

I will not take time to discuss details of the pathology. We have taught for a number of years in pre-eclampsia and even in eclampsia that there is a nephrosis. The progress in the study of the kidney is rather casting some doubt upon our security in the opinion that we were dealing only with a nephrosis, but, after all, we may be dealing with a nephritis. That is still *sub judice*.

I can cover several pages in a word on the etiology of these toxemias. If we are to determine what the etiology is we must answer certain questions: What is the genesis of the characteristic liver lesions? Why is there a predisposition to toxemia in primiparae, in multiple pregnancy, and in hydramnios? Why is it greater in northern countries? Why is it greater as full term approaches? Why is edema a favorable sign? Why is intra-uterine death followed by improvement? Why is a milk diet high in protein and salts just as efficacious as a low-protein, salt-free diet? You can see those are the things that make it difficult to analyze the theories.

We have twelve or more theories, but in spite of these attractive theories, the cause of eclampsia still remains unknown.

From what must we diagnose an eclampsia? From acute yellow atrophy of the liver and from uremia, from strychnine, phosphorous, and nitrobenzol poisoning, epilepsy, and, finally, from hysteria. It is disastrous to institute treatment for eclampsia when we are dealing with some well-known type of poisoning, or an epilepsy or an hysteria. The prognosis is always serious.

The maternal mortality is five or six times as great in the severe type of toxemia. Formerly, ante partum and intra partum types were considered more dangerous than the post partum types, but by conservative treatment the mortality has been reduced so that we know now that it was bad treatment and not a difference of the type of the eclampsia that made the difference in the mortality. Practically all of our mortality in toxemia is in the severe type.

Formerly eclampsia was supposed not to recur, but it sometimes does. Hinsman found it in 1.92 and Peckham in 4 per cent.

I wish to say a word about the remote prognosis. Even after apparent recovery, a chronic nephritis may supervene or remain, Peckham found it in 23 per cent. It depends upon the severity of the type of the eclampsia, upon the age, upon the parity, upon the elevation of the blood pressure to 200 or over, and if albumin is more than ten grams to the liter. Hence, eclamptics must be kept under observation for months and sometimes even years, because then we haven't an eclamptic but a nephritic with which to deal.

Unavoidably our treatment is empirical and unsatisfactory because the etiology is not known. There are two diametrically opposed groups; the radicals who insist on emptying the uterus immediately after the first convulsions, and conservatives who claim that operative methods are not only unnecessary but actually harmful. Radicalism was predominant fifteen years ago; conservatism is now advocated by nearly every authority. Conservatism, let me emphasize, is not inactivity. The conservative is the man who knows how and when to be radical. Twenty-five years ago the radicals advocated accouchement forcé, later vaginal hysterotomy or vaginal caesarian section and now secarian section, but the statistics were bad; the shock of immediate operative delivery seems to increase mortality.

We have six conservative methods of treatment, any one of them giving about the same results. First is the Stroganoff method; that is, the sedative method, giving morphine, a quarter of a grain, when the patient first comes in, an hour later thirty grains of chloral per rectum, seven hours later more chloral, then a quarter of morphine, no more morphine for twenty-four hours, and the chloral given every seven, eight, ten or twelve hours, according to the indications until the convulsion subsides.

In all of these six methods this sentence occurs by their advocates: "The patient is allowed to

deliver herself normally, or, at most, no artificial delivery is employed until the os is completely dilated." Then we have venesection; induction of labor; the Dublin method, which is the eliminative method, starvation, gastric lavage, colonic lavage, submammary infusion of sodium bicarbonate. We have two more recent treatments, namely, the magnesium sulphate injection intravenously of 20 c. c. of a 10 per cent solution every hour until the convulsions cease. No other medication is used and no attempt made at delivery until the os is completely dilated. We have also the giving of liver extract, 10 c.c. intramuscularly at intervals of 10 to 60 minutes until the blood pressure falls and convulsions cease; no attempt at delivery. Here are six methods, all yielding good results, but note that in all no attempt is made at delivery until after the os is completely dilated.

The *sine qua non* of conservative treatment is deliberateness, not haste. Undue haste is not necessary unless there be evidence of returning symptoms of eclampsia. Whatever we do in the severe cases, the death rate will remain around 20 per cent, showing the necessity of pre-natal care to halt the development of the toxemia.

It must be remembered that any operative procedure increases the maternal mortality in eclampsia. The operative procedure seems to be the last straw whether it be the old accouchement forc  , the vaginal hysterotomy, the cesarean section, or other methods of forced delivery.

Under the Stroganoff method the reported maternal mortality is 2.6, venesection 9.4, the Dublin eliminative treatment 10.3, magnesium sulphate 13.5, and liver extract 6.9 per cent, which shows, as compared with 20 to 30 per cent, a very great seems not to matter greatly what your conservative treatment may be if you don't try to deliver the woman hurriedly.

Conclusions. The causes of the toxemias of pregnancy are unknown. Pre-natal care is the most important of all methods in the treatment, because it insures early detection, early treatment, and early cure. Conservative treatment gives much better results than radical methods, and, finally, every woman who has had a toxemia of pregnancy should be followed for months to avoid the remote results such as nephritis, etc. No treatment as yet has been found to be ideal and cannot be so until the cause of eclampsia is discovered.

DISCUSSION

DR. GEO. M. WILLIAMSON (Grand Forks, N. D.): There is very little that I could possi-

bly say or add to what has been said by Dr. Litzenberg. There are one or two observations that I might make which to me would appear practical. Dr. Litzenberg recited at the close of his address the six methods of treatment that give practically the same result. I am glad to know that he is conservative in the treatment of eclampsia. I believe any one of these methods is good and will give practically the same results, but we should all have the technic of at least one method thoroughly fixed in our mind, for we do not know when we may be called upon to treat a case of eclampsia.

Stroganoff by his method reports a mortality of only 2.6 per cent, but that is by Stroganoff himself in his hospital, where as a series of cases he collected by other accouchers gives a mortality of more than 10 per cent. I wonder what the results would be, or what the mortality would be, if he were out in the country or in some small town doing this sort of work. In his low percentage of mortality he is working under the best possible conditions. I wonder what success many other men who advocate and teach certain methods and report good results would be in smaller towns, in settlements far away from hospitals.

We don't all practice in hospitals; we cannot all give our patients the pre-natal care that is so much desired in these cases, but we are called out perhaps long distances in the country, and find the woman in an eclamptic fit. What are we going to do? Everybody should have some well-defined, practical plan, that can be put into practice in any place, under any circumstances, thoroughly fixed in his mind.

Personally, I like the Dublin treatment, perhaps, because I was taught that method some years ago while spending time in the Rotunda Hospital, Dublin. It is easy; you can do it almost anywhere. The result is the same as that in the Stroganoff system in a series of cases.

Let us all have some well-defined plan in our mind, no matter what it is, that we can utilize in the hospital or far out in the country with no help at all, when we are all by ourselves, as many of us are when we run across cases that we so much dread.

As regards the cause of eclampsia, or the toxemias of pregnancy, very little, as Dr. Litzenberg says, is known. I think one of the best definitions that I have seen of eclampsia is: "The occurrence of fits in a pregnant woman which would not have seized her if she had not been pregnant." I believe that covers the condition very well and it is about all any person knows of eclampsia at the present time.

PROGRESS IN BALANCED ANESTHESIA*

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Six years ago, before this society, I proposed the term "balanced anesthesia" to designate the procedure wherein one uses safe doses of several anesthetic and hypnotic agents rather than a single dose of one agent, especially when the patient is a bad risk. In the last six years certain new agents and methods of administration have been introduced as anesthetics or aids in anesthesia, and although these agents have been used with a certain degree of satisfaction as basic anesthetics, still better results are obtained when they are used in smaller doses in connection with balanced anesthesia. Some of these agents are sodium iso-amylethyl barbiturate (sodium amytal), sodium ethyl (1-methylbutyl) barbituric acid (pentobarbital sodium or nembutal), and tribromethyl alcohol (avertin). An outstanding help is Magill's soft-tube method of intratracheal anesthesia, and another aid is the hypertensive drug, ephedrine.

In choosing the agents with which one wishes to carry out balanced anesthesia, one must consider the several factors involved in the choice of an anesthetic agent or method of administration. I have previously pointed out that these factors

usually divide themselves into two groups. The pharmacologic effects of the agent constitute one group, and these factors usually cannot be modified. The second group consists of the remaining factors and these usually can be modified. Table 1 is based on a consideration of the effect of each agent on the average patient. Certain special operative procedures would involve us in a prolonged discussion, and I have limited my remarks to those more commonly met with in general surgery and obstetrics.

In the average surgical or obstetric procedure the principal consideration is the physical condition of the patient. General debility in itself is a contraindication to the use of certain agents and methods, but when general debility is not present, diseases and other physical conditions may be, and often are, deciding factors in eliminating from consideration certain anesthetic agents and methods of administration.

In table 2 I have attempted to show the relationship of certain agents and methods to disease. Obviously only a few of the more common diseases can be considered here. The fact that in certain diseases some agents and methods are more or less contraindicated, regardless of age or sex, and so forth, makes it unnecessary to go into

TABLE 1
Pharmacologic Effects of Most Commonly Used Anesthetic Agents
Probability that desired effect will be obtained

Inhalation and insufflation	Drop ether*	Gases* (with or without ether)	Barbiturates**	Avertin**	Spinal*	Block***	Infiltration***	Combined or balanced anesthesia****
Anesthesia	Yes	Yes	No	No	Yes	Yes	No	Yes
Analgesia	No	Yes	Yes	Yes	Yes	No	Yes	No
Relaxation	Yes	No	No	No	Yes	Yes	No	Yes
Quiet respiration.....	No****	No****	Yes	Yes	Yes	Yes	No	Yes
Prompt recovery of reflexes.....	No	Yes	No	No	Yes	Yes	Yes	Yes
Untoward results—								
Immediate	No	No	No	No	Yes	No	No	No
Remote	Yes	No	Yes	Yes	?	No	No	No

* Mild effect from preliminary medication.

** Used intravenously or rectally as a basic anesthetic.

*** Definite effect from preliminary medication.

**** With intratracheal—Yes.

*Read before the District Medical Society, Grand Forks, North Dakota, November 18, 1931.

TABLE 2

Safety of Various Anesthetic Agents and Methods in Relation to Physical Condition of Patient, and Some Common Diseases for which Operation is Performed

Safety of agents or method

Physical condition of patient, complicating disease, or organs operated on		Drop ether	Gases**	Barbiturates***	Avertin***	Spinal	Block	Infiltration	Combined or balanced anesthesia
Very young, 4 years or less.....	1*	Yes	Yes	No	No	No	No	Yes	Yes
	2*	No.	Yes	No	No	No	No	Yes	Yes
Very old, 75 years or more.....	1	No	Yes	No	No	No	Yes	Yes	Yes
	2	No	Yes	No	No	No	No	Yes	Yes
Pulmonary disease	1	No	Yes	No	No	Yes	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Cardiac disease (marked).....	1	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Diabetes	1	No	Yes	Yes	No	Yes	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Vascular disease (marked).....	1	Yes	Yes	Yes	Yes	?	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Diseases of colon, exclusive of obstruction****	1	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Intestinal obstruction	1	No	Yes	No	No	Yes	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Operation on kidney.....	1	No	Yes	No	No	Yes	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Operation on genito-urinary tract	1	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Operation on stomach.....	1	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes
Operation on liver, gall-bladder or ducts.....	1	Yes	Yes	No	No	?	Yes	Yes	Yes
	2	Yes	Yes	No	No	No	Yes	Yes	Yes
Operation for goiter.....	1	No	Yes	Yes	No	No	No	Yes	Yes
	2	No	Yes	No	No	No	No	Yes	Yes
Operation on appendix.....	1	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
	2	No	Yes	No	No	No	Yes	Yes	Yes

* 1 fair or good physical condition; 2 general debility.

** Either nitrous oxide or ethylene, depending on whether one must avoid an inflammable gas, and with or without ether.

*** Used intravenously or rectally as a basic anesthetic.

**** The anesthesia for surgical procedures on the intestines are considered in another publication.

detail in respect to other factors until the choice is safely limited from the standpoint of the patient's disease.

From examination of the tables it may be noted that those agents which are generally used in application of the principle of balanced anesthesia are seldom contraindicated in most cases even when used alone. Infiltration anesthesia is not ordinarily excluded; block anesthesia is almost always usable; nitrous oxide or ethylene can be employed in almost any case; the barbiturates in small doses, and morphine are generally usable, and doses of tribromethyl alcohol smaller than those used in producing basic anesthesia may be

employed, so that when one limits still further the dose of any of the agents mentioned, or of an agent used in any one of the methods mentioned, and uses several agents instead of a large dose of one agent, the result is a balanced anesthesia that finds a field of usefulness, represented in the final column in table 2, to which there are practically no exceptions.

When one has satisfied himself in regard to the relative safety of the anesthetic agent, from the standpoint of pharmacologic effect as well as from that of the patient's disease, one may then consider the factors which can easily be modified. These are: (1) the ordinary requirements of a

particular operation, (2) the technic employed by the surgeon and any particular requirements that must be met, (3) the experience of the anesthetist, particularly whether he or she is skilled or unskilled in the use of an agent or method, and (4) the patient's mental condition, and the factors to be considered in the final decision as to agent and method. When an anesthetic agent or method of administration is not contraindicated by the mental condition of the patient it may be advantageous to employ that agent or method.

Since no single anesthetic agent or method can be used as a routine, with safety, one must make special effort to choose the best agent for use in a given case. If one must resort to a routine which is to be carried out in the majority of anesthetic procedures, the best results can be expected from some form of balanced anesthesia. The full advantages of balanced anesthesia are enjoyed only when any drug or method which would be contraindicated if used alone in a given case is replaced in the balanced procedure by another agent, or one that is known to be relatively safe if used alone.

The other aids which I mentioned at the onset are ephedrine and Magill's technic. The vasodpression frequently associated with spinal anes-

thesia is considered by many to be the most dangerous untoward result of the method. It has been my experience that intramuscular administration of about 50 mg. of ephedrine has counteracted the fall in blood pressure that results from a moderate dose of procaine. Laboratory experiments would indicate that ephedrine is the most effective substance yet introduced for elevating the blood pressure following spinal anesthesia. Magill's recent description of a method of intratracheal anesthesia in which a soft rubber tube is employed is superior in most instances to any other method of intratracheal anesthesia. This technic maintains the patency of the airway and results in quiet breathing, relaxation, and easier administration of the agent or agents used.

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COLLAPSE THERAPY IN PULMONARY TUBERCULOSIS*

By FRANCIS F. CALLAHAN, M.D.

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In the treatment of pulmonary tuberculosis and other chronic lung diseases great advances have been made during the past two decades. I shall attempt to discuss some of this progress, particularly in the various types of collapse therapy.

For generations clinicians have observed improvement and sometimes complete arrest of parenchymal tuberculous lesions of the lungs following serous pleural effusion. Improvement was occasionally noted in cases of spontaneous pneumothorax.

It is well for the patient to understand that surgery is a valuable adjunct in the treatment of his tuberculosis, but that it is not a cure. There is no safe shortcut to the healing of an ulcerative lung tuberculosis, and patients who have had any type of lung surgery must submit to a period of rest and building up of their general health, the

length of this period depending on the severity of their disease. On the other hand, carefully selected cases of collapse therapy which are given the proper after-care will master the disease, as a general rule, more rapidly, and certainly more thoroughly, than those cases of equal severity who have not had the advantage of these methods.

The general use of roentgenologic chest studies has been essential in the application of chest surgery. In the early days of pneumothorax, X-ray examination of the chest was comparatively rare, and, when it was used, the technic was greatly inferior to that which we have today. I believe this method of treatment would have been relegated to the background if the roentgenologist had not come to our aid in making a better selection and also in the follow-up care of these cases.

Cole,¹ in 1910, published a paper in which he described very accurately the X-ray findings in pulmonary tuberculosis, but it took a great many years to convince chest clinicians that he was right. Amberson² by his serial radiological

*Pneumothoracies performed by staff at Pokegama Sanatorium; the thoracoplasties by Dr. L. E. Daugherty of St. Paul and the phrenicectomies by Dr. D. Greth Gardiner of St. Paul.

studies in tuberculous cases over a period of months or years taught us that some tuberculous lesions heal and leave very few vestiges of a lesion. This is extremely important, because quite frequently on first examination we find the disease equally distributed in the two lungs and, after a period of routine treatment, the lesion in one lung heals while the other progresses or remains stationary. Cases of this type often retain scars at the site of the healed lesion, which, without carefully made stereoscopic X-ray films, would keep us from attempting some form of collapse therapy on the side of the progressing or stationary lesion.

The success or failure of collapse therapy depends upon the close co-operation and understanding between the clinician, the surgeon and the roentgenologist. There are a few fortunate individuals who have had wide experience in all three branches, but these individuals are exceptional.

The oldest, and in my opinion the most important type of collapse therapy—pneumothorax—should not require the services of a surgeon. However, the clinician performing the initial pneumothorax should be one who has had experience in diseases of the chest.

In this method there is great danger of air embolism, which, however, should never occur if the operator pays attention to the manometric readings. The only fatality I have seen was due to the operator's introducing 50 c.c. of air in spite of unsatisfactory readings. A postmortem on this case showed complete obliteration of the entire pleural cavity by adhesions.

Carelessness may also result in a rupture of the visceral pleura with production of a spontaneous pneumothorax. Pleural shock rarely occurs and is due, usually, to poor anesthesia. Infection introduced into the pleural cavity from without must be carefully avoided.

In our experience, fluoroscopic examination has proved a most valuable adjunct in administering pneumothorax, and we resort to it in all cases before and after inflation unless the patient is bedridden.

The idea of collapsing the lung with some innocuous gas was suggested by Carson³ more than one hundred years ago. As far as one can learn he did not put his idea into practice. Potain⁴ aspirated the fluid that followed spontaneous pneumothorax and replaced it with air.

Between the years 1888 and 1894 Forlanini⁵ aspirated serous pleural fluid from three cases having ulcerative lung lesions, and maintained the lung collapse with nitrogen. It appears that

Forlanini⁶ also collapsed a series of cases that had no effusions but did not publish his results until 1906, when Brauer⁷ openly advocated this form of treatment.

John B. Murphy⁸ in 1898 collapsed six cases of relatively early lung tuberculosis with fairly good results. Lemke,⁹ a student of Murphy's, collapsed a series of fifty-three cases. Murphy gave up the work because it would take too much time from his surgery, and Lemke died a short time after publishing his results. It was from the work of Murphy and Lemke that Brauer became interested in this method of treating lung tuberculosis.

Although Brauer obtained his ideas from others and his technique practically has been abandoned, he did more to establish pneumothorax as a therapeutic measure in treating lung tuberculosis than any other individual. The method was almost abandoned in the United States after the work of Murphy and Lemke but was reintroduced by Robinson,¹⁰ a student of Brauer's, who, with Floyd, published his results in 1912. The only other individual in this country who had taken the work seriously at this time was Mary Lapham¹¹ who published a series of case reports the same year.

The ideal case for pneumothorax is one with recent unilateral disease that has a free pleura. Ideal cases that come to us for treatment are the exception rather than the rule. We therefore have to make the most of the situation that is presented to us.

Pneumothorax is by far the most important single means of controlling pulmonary hemorrhage when we know which lung is bleeding. It can be applied in cases of acute tuberculosis, even in pneumonic lesions, if the lung is not entirely consolidated and if there are no dense pleural adhesions. These acute cases are often complicated by purulent, tuberculous effusions, but the risk is justifiable. When the parenchymal lesion becomes quiescent or arrested, the pus may disappear with repeated aspirations and replacement with air. These aspirations are rather frequently complicated by infections along the needle tract from the pleura to the skin.

Kinsella¹² recommends washing the needle with sterile normal saline solution before withdrawing it in order to avoid this complication. If the pleural infection is not controlled in this manner, thoracoplasty is the best method of treatment.

Few lungs which we have collapsed by pneumothorax have been entirely free from pleural adhesions. The location of the adhesions and their relation to the lesion in the lung parenchyma

are the important factors. Then, too, many adhesions can be stretched by gradually increasing the intrapleural pressure. In case these simple measures fail, the adhesions may be cut, unless they contain lung tissue, by a cautery passed through a thoracoscope, or the thoracoscope may be used to locate the adhesion, and it may be cut by an open operation.

A rapid increase of intrapleural pressure is likely to bring about a rupture of the visceral pleura, causing a spontaneous pneumothorax, and occasionally a hydro-pneumothorax or pyopneumothorax.

Another complication that occurs rather infrequently is a mediastinal hernia. In this condition, a part of the air in the pleural sac of the collapsed side and the collapsed lung are pushed through the posterior mediastinum and encroach upon the good lung. The encroachment on the good lung is much greater on expiration than on inspiration. The treatment for this complication is phrenicectomy and a gradual reduction of pressure on the collapsed side.

Serous effusions, large or small, occur in practically all cases of pneumothorax if the collapse is maintained for a considerable period of time. The majority are absorbed in a few days. Large effusions should be aspirated and replaced with air, because the compression with fluid and air in the pleural sac is not uniform, and adhesions may develop that will render the collapse useless. In the second place, large effusions remaining in the pleural cavity for a long time tend to become purulent.

When pneumothorax does not give sufficient collapse to close cavities and to control sputum and symptoms of activity, it can at times be greatly aided by a phrenicectomy on the collapsed side, with maintenance of the pneumothorax. If this fails, pneumothorax should be abandoned, and if the patient's condition justifies it a thoracoplasty should be performed.

I am of the opinion that pneumothorax should always be attempted before subjecting a patient to thoracoplasty. If it fails, a thoracoplasty can be resorted to with very little delay. We have had many more years of experience with pneumothorax than with phrenicectomy, and I believe in the majority of cases requiring lung collapse—first, pneumothorax should be tried; second, phrenicectomy; and, lastly, thoracoplasty.

The idea of compressing diseased lungs by removing sections of ribs has been current for many years. Alexander,¹³ in his book, "Surgery of Pulmonary Tuberculosis," published in 1925, gave an excellent historical review of the devel-

opment of this operation. It appears that Cerenville¹⁴ performed the first operation of this kind to close a cavity.

The operation performed by Cerenville in 1885 was on a rather small scale. In Europe, Brauer,¹⁵ Friedrich,¹⁶ Wilms,¹⁷ Sauerbrück,¹⁸ and many others have performed the operation for many years. The first thoracoplasties by Brauer and Friedrich were performed in single stages, but the results were very unsatisfactory.

Wilms advocated a paravertebral thoracoplasty with the removal of small sections of ribs. Sauerbrück combined Wilms' method with his own, thereby developing the operation that most chest surgeons are following today. The first extensive work in thoracoplasty for lung tuberculosis on this continent was done by Archibald,¹⁹ who reported his work in 1921. Since then thoracoplasty has won the permanent place that it deserves in our armamentarium for combating pulmonary tuberculosis.

It has two great functions in the treatment of lung disease; the obliteration of chronic tuberculous cavities and of chronic empyema cavities. It is most efficacious in the treatment of lung tuberculosis in cases of long standing with fibrosis, retractions and pleural adhesions; in other words, where pneumothorax is impossible and phrenicectomy is of limited value.

In recommending a thoracoplasty we should be fairly certain that the contralateral lung has no active tuberculosis and that the patient is in good enough general condition to survive the operation. Once a lung is collapsed by thoracoplasty, it is collapsed forever, and we cannot allow it to expand as we can with pneumothorax, when the contralateral lung develops progressive disease. On the other hand a thoracoplastic patient has some decided advantages over one with pneumothorax. A thoracoplasty is performed, usually, in from two to three stages over a period of from two to eight weeks, and after a period of convalescence the patient is through with operative procedures, while a pneumothorax patient must have repeated inflations for months or years.

Plastic operations on the chest should be as carefully performed as any other plastic surgery if the maximum benefit is to be obtained from this method. I shall not go into its technique in this paper because it is not in my field. However, the clinician responsible for the after-care of these cases can usually tell by careful roentgenologic study of the chest when the lung cavity or empyema pocket is closed.

The removal of ribs should be continued until the maximum closure is produced, if it is not

possible to obliterate these cavities entirely. We often obtain great clinical benefit from the immobilization of the diseased lung in cases of large lung cavities, even though we fail to close the cavities completely. These cases, however, continue with a positive sputum, and there is a much greater possibility of a relapse than in the cases that become negative, and they are likely to be a menace to the members of their families and immediate associates.

Lipiodol injections will frequently reveal the presence of an unclosed cavity or bronchiectasis, or both, which do not show in ordinary roentgenograms on account of the great density of pleura overlying them. We occasionally find this state of affairs after an ordinary two-stage posterior operation and have it corrected by a third or lateral stage, which is easily performed and causes very little shock. No collapse operation can be considered completely successful, regardless of clinical improvement, unless the patient is free from tubercle bacilli in his sputum and all symptoms of toxemia are absent.

When we did our first thoracoplasties, we looked upon the operation as one to be performed in two stages. The first stage meant the removal of sections of six or seven of the lower ribs, beginning at the eleventh rib and working upward, and the second, the removal of segments of the upper ribs. This procedure is suited to lower-lobe lesions and to operations for obliteration of pockets in the pleural cavity due to chronic empyema.

In collapsing a lung for tuberculosis, we usually find the major lesion in the upper lobe. In these cases I believe that the first operation should be done over the site of the lesion. In the first place, by putting the main lesion at rest, we are protecting the body from absorption of toxins from this area; secondly, the possibility of hemorrhage from this area is decreased, and lastly, the subsequent operation over the lower part of the chest or in the axilla produces much less shock than does an upper stage operation and may even be unnecessary.

The third method of immobilizing the lung is by avulsion of the phrenic nerve. Simple phrenicotomy and crushing of the nerve is often unsatisfactory on account of the presence of accessory branches of the nerve. It is probably the safest of all collapse methods, but frequently must be followed by a more radical procedure.

Simple phrenicotomy was first done by Steurtz²⁰ in 1911 for unilateral pulmonary tuberculosis when pneumothorax was prevented by pleural adhesions. Sauerbrück²¹ reported five

cases benefited by phrenicotomy in 1913. The more radical operation—phrenicectomy—was first suggested by Goetze²² and Felix²³ in 1921. During the past few years there have been voluminous reports on phrenic nerve operations from all countries where tuberculosis is treated. In this country the reports of Ray Matson,²⁴ John Alexander,²⁵ and E. J. O'Brien²⁶ probably cover the largest number of cases over the greatest period of time.

A difference of opinion exists as to the type of case to be treated in this manner. In my experience, its greatest use is as an adjunct to the more radical types of collapse therapy. When we are preparing for a thoracoplasty, we usually do a phrenicectomy with benefit to the lung locally and the patient's condition generally.

In one of our cases a rather large upper lobe cavity, that had remained open after ten months of bed-rest, healed completely. The result in this case was so satisfactory that further surgery was unnecessary. It is my impression that patients stand a thoracoplasty better when it is preceded a few weeks by an avulsion of the phrenic nerve; furthermore, when there is a marked rise of the diaphragm it is not necessary to remove so many of the lower ribs.

It is of great value in treating mediastinal hernias that occasionally develop when a lung is collapsed by pneumothorax. Adhesions that prevent a successful pneumothorax may be relaxed enough by a good rise of the diaphragm to give a satisfactory result. After phrenicectomy these cases also require inflation less frequently. Slight tuberculous lesions, which fail to respond to bed-rest, and in which pneumothorax is impossible or seems inadvisable, may heal promptly following avulsion of the phrenic nerve. It is also of great value in some cases of tuberculous lesions of the lower lobe where we not only get the benefit of immobilization but of direct compression of the diseased area.

Next to pneumothorax, phrenicectomy is the most valuable method for controlling pulmonary hemorrhage quickly. Warner²⁷ reports a case of severe intrapleural hemorrhage due to trauma that was checked by phrenicectomy. Lower lobe bronchiectasis is benefited by this operation, particularly if it is performed before dense adhesions develop.

Having had no actual experience with intrapleural and extrapleural pneumolysis, I can say little about them. However, in the hands of some surgeons, the intrapleural method has been quite successful, but few claim beneficial results from extrapleural thoracoplasty in its present stage of

development. I believe that careful and more complete thoracoplasties will obviate the necessity for extrapleural operations in the majority of cases. Alexander's²⁸ intercostal neurectomy is of interest, but at best gives only a partial collapse, and one wonders if patients able to stand a complete eleven-nerve neurectomy would not do as well with a thoracoplasty performed in multiple stages.

SUMMARY

The follow-up care of patients who have had collapse therapy is almost as important as the pre-operative selection, or the operation itself. These cases, though postoperative, are tuberculous primarily and surgical cases secondarily. They must have, in addition to the usual care any surgical case receives, the triad of treatment, rest, good food and fresh air that is universally recognized as essential in the routine treatment of pulmonary tuberculosis.

In addition to these measures, the thoracoplastic patient must have support for the chest wall by means of tightly applied adhesive straps or weights if the maximum collapse is to be obtained. When these measures are neglected the best surgery will fail. We occasionally see cases where an excellent technical operation has been wasted because the neglect of this procedure has allowed a marked degree of expansion to occur.

Compression therapy is here to stay unless a specific cure is discovered. Even with a specific cure, it is quite likely that chronic thick-walled cavities will have to be obliterated by plastic surgery. Each year we see improvement in technique, selection of cases and postoperative treatment.

The number of patients benefited or cured by collapse therapy increases from year to year. I believe we are adopting a more sane attitude in collapsing cases earlier than we did in the past. Some advocates of collapse therapy say that all cases of unilateral infiltration extending below

the clavicle should be treated by phrenicectomy or pneumothorax before pleural adhesions develop. I feel that this is too radical, but if there is no improvement in these slight lesions after two or three months of bed rest, collapse therapy is indicated.

There is no justification for the attitude of the ultra-conservative who scoffs at all forms of collapse therapy until a patient has spent a year or two in bed. Cases discharged from sanatoria with open cavities usually relapse, regardless of their good general condition, when leading a carefully guarded life. Patients with bilateral disease with cavitation on one side should be studied by serial roentgenograms to find out when it is feasible to close these persistent cavities by some form of compression. Failure to close large unilateral cases with cavitation immediately by local measures is inexcusable.

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OUTLINE OF ROENTGEN DIAGNOSIS

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This is the conclusion of a series of seventeen articles entitled "Outline of Roentgen Diagnosis," by Dr. Leo G. Rigler, Associate Professor in charge of Roentgenology at the University of Minnesota.

THE URINARY TRACT

(Continued from Dec. 1 issue)

A. *Methods of Examination and Technical Considerations.*

1. *Films of the urinary tract.*

a. Preparation is necessary.

Frequently it is advisable to give a purge and enemas to clear the bowel of faeces which may cover up the kidneys. The presence of large amounts of gas may also confuse the picture and often it is best not to use any preparation in order to avoid gas formation.

b. Careful technique is imperative and it is advisable to take separate films of the kidneys and bladder.

c. Visualization of the kidneys is better in fat individuals than in thin ones because the thick layer of peri-renal fat permits the kidney shadows to stand out by contrast.

d. Both kidneys can usually be well visualized, but the bladder requires an opaque medium although if distended with urine it will cast a faint shadow.

2. *Pyelography and ureterography.*

Following cystoscopy and catheterization of the ureters an opaque substance such as Na I or Na Br or Thorium is injected into the kidney pelvis or, by withdrawal of the catheter, into the ureter. In this way the outline of the kidney pelvis and the ureter can be clearly made out on an x-ray film.

3. *Pyeloscopy.*

Fluoroscopic examination of the kidney pelvis and ureter after injection of opaque media

are of value to determine the constancy of apparent defects and constrictions.

4. *Uroselectan Injections* (Intravenous urography)

Uroselectan, an iodine compound, may be injected intravenously. It is excreted by the kidneys so that within fifteen minutes the shadow of the compound becomes visible in the urinary tract. Later the bladder fills with the material and becomes clearly visible. The method is of advantage in those cases wherein cystoscopy is difficult, impossible, or contraindicated. It is also valuable to demonstrate the kidney pelvis even though the ureter is obstructed.

5. *Cystograms.*

The bladder may be filled with Na I or Ag I emulsion through a catheter and outlined. Films should be made both antero-posteriorly, laterally, and with the patient sitting upon the film.

B. *Normal Appearance of the Urinary Tract in Ordinary Film*

1. The *kidneys* can be visualized showing the typical kidney shape. The right is 1 to 2 cm. lower than the left and extends usually from the 12th dorsal to the 3rd lumbar vertebra. Occasionally the upper pole of the right cannot be well visualized as it is obscured by the liver.

2. The *psoas muscles* appear as triangular shaped shadows alongside the spine.

3. *Faecal matter* and *gas* in the bowels may cast confusing shadows over the kidneys.

4. In the pelvis, frequently, a series of small, rounded densities can be seen lying in a chain along the outer margin of the bladder. These represent *phleboliths* and are without significance.

C. *Pathological Changes in the Urinary Tract in Ordinary Films*

1. *Changes in size of kidneys.*

- a. Increase in size of one kidney may appear indicating some pathological change such as a tumor, hydronephrosis, tuberculosis.
- b. Decrease in the size of one kidney may indicate an atrophic kidney, often congenital.

2. *Change in position.*

The right kidney is frequently ptosed, its lower pole appearing more than 2 cm below that of the left. A lower position of the left than the right usually means gross enlargement, but may mean ptosis also.

3. *Changes in consistency.*

Mottling of the kidney shadow may indicate tuberculosis or pyonephrosis but gas in the colon may simulate this closely. Mottling is of very little importance in diagnosis.

4. *Calculi in the urinary tract.*

Approximately 85% of kidney and ureteral stones will cast a distinct shadow on an x-ray film. 65% of bladder stones will cast a distinct shadow. The absence of a shadow is therefore fairly good evidence against the presence of stones.

a. Kidney and ureteral calculi give the following findings:

- (1) Dense, irregular, or round shadows varying in size.
- (2) Frequently multiple but may be single.
- (3) Seen within the kidney shadow or in ureteral region.
- (4) Seen on a level with or posterior to the bodies of the vertebrae (lateral view).
- (5) Usually no change with change in position and should be constant on repeated examination.

b. Kidney and ureteral calculi must be differentiated from:

- (1) External objects in clothing or densities in the skin.
- (2) The tip of the transverse process of the first lumbar vertebrae which on careful examination can be seen to be connected with the spine.

(3) Gall stones. These will appear outside the kidney shadow in some positions, usually have clear centers, and are anterior. Kidney stones appear sharper and smaller with the film at the patient's abdomen, while gall-stones do the reverse.

(4) Calcified mesenteric glands. These are not homogeneous, are stippled, very irregular, and are usually anterior to the kidneys and ureters as shown by reversing the position of the patient or taking a lateral view.

(5) Bowel shadows which are inconstant.

(6) Stones or calcified fecoliths in the appendix. These are not so constant in position and are more anterior.

c. *Bladder Calculi* give the following findings:

- (1) Usually multiple, large, often lamellated shadows.
- (2) Seen within bladder area usually near the base.
- (3) Occasionally within posterior urethra or prostate and in these cases look like a huge collection of very small stones.

d. *Bladder calculi* must be differentiated from:

- (1) Phleboliths which are smaller, rounder, less dense, and lie near the outer margins of the bladder.
- (2) Calcified arteries which are common in the pelvis and which give a tube-like shadow of much less density.
- (3) The shadow of a large prostate which may appear but is not as dense and much larger than bladder stones.

5. *Perinephritic abscess.*

In many cases of perinephritic abscess certain findings may appear in the ordinary films which are of considerable value in diagnosis.

a. Findings.

- (1) Obliteration of the kidney shadow on the involved side.

- (2) Obliteration of the psoas muscle shadow.
- (3) Scoliosis of the lumbar spine with concavity toward the side of the lesion.
- (4) Displacement of the colon (shown by gas).
- (5) Occasionally a high diaphragm on the side of the abscess due to an extension into the subphrenic region.

b. Differentiation.

- (1) Tumors and polycystic kidney may occasionally give some of the above findings.
- (2) Psoas abscess may cause obliteration of the psoas muscle shadow.

D. *Normal Appearance of Pyelogram and Ureterogram*

1. *The kidney pelvis* is lily-shaped having a cone shaped lateral portion, narrowing as it approaches its junction with the ureter and broadening as it approaches the kidney. The major calyces vary in number and appear like solid tubes branching out into the minor calyces which are narrow and cup-shaped. If rotated and seen on end the calyx may appear very round and dense like a kidney stone.
2. *The ureter* appears like a long narrow tube lying along the spine and curving outward near the kidney and near the bladder. Peristalsis can be visualized as a wave of constriction running down the ureter. Occasionally a gas bubble may produce the appearance of a defect.

E. *Pathological Findings in the Pyelogram and Ureterogram*

1. *Anomalies.*

These are very common, are often bilateral, and can only be determined by pyelography.

- a. Double pelvis, one being very small and the other large. These may connect with one ureter or have separate ureters which show a double shadow down to the bladder or join before reaching the bladder.
- b. Horseshoe kidney. The pelvis is placed transversely instead of vertically and is much larger than normal.

c. Rotated kidney. The pelvis is rotated so the calyces are seen on end.

d. Polycystic kidney. Always bilateral and gives:

- (1) Elongation of the calyces.
- (2) A "spider" appearance to the calyces.
- (3) Lobulation with deformity of the pelvis and calyces, in the form of rounded depressions into them due to the cysts.

2. *Ptoxis of kidney.*

This is best shown in the standing position, a marked downward movement often taking place. The marked angulation of the ureter and the low position and downward rotation of the pelvis are characteristic.

3. *Hydronephrosis.*

- a. Early blunting of the minor calyces, their sharp ends being lost.
- b. Clubbing of the calyces, the ends being dilated and larger than the major calyces.
- c. Enlargement of the pelvis and distortion.
- d. Finally formation of large sac.

4. *Pyonephrosis.*

May show the above findings and also:

- a. Destruction of cortex of kidney with extension of opaque solution beyond the margins of the minor calyces.
- b. Formation of large pockets which fill with the opaque solution giving large rounded or irregular densities.
- c. Irregularity and lengthening of the calyces.

5. *Tuberculosis.*

In its earliest stages it resembles first hydronephrosis, then pyonephrosis. In addition it may give:

- a. Numerous rounded densities out in the cortex containing the opaque medium. (Cortical abscesses.)
- b. Marked involvement of the ureter which becomes tortuous, irregular, full of strictures.

- c. Occasionally a pelvis which is smaller than normal, irregular and contracted.
- 6. *Tumors of the kidney.*
 - a. Papilloma of the pelvis tends to give an area of lessened density, usually rounded and sharp, in the pelvic shadow.
 - b. Hypernephroma gives marked deformities of the pelvis and calyces. One or more calyces may be obliterated, the pelvis may show a pressure defect, the ureters may be stretched, lengthened, distorted.
 - c. Carcinoma may give the same findings.
- 7. *Stone in pelvis.*
 - a. Negative shadow or area of lessened density within the opaque medium if it is a non-opaque stone may occur.
 - b. Area of increased density otherwise is present.
 - c. Non-opaque stone may retain some of the opaque medium after it has been expelled and thus give a shadow.
 - d. Distortion of the pelvis, especially at the uretero-pelvic juncture may occur.
- 8. *Ureteral findings.*
 - a. Strictures show as narrowings of the lumen of the ureter. Normally there are narrowings at the uretero-pelvic juncture, crossing the iliac vessels and at the junction with the bladder.
 - b. Irregularity and distortion usually are due to tuberculosis.
 - c. Distortion may be due to pressure of a tumor of the kidney.
 - d. A small negative shadow may be due to a tumor of the ureter itself. This may produce obstruction with failure to fill.
 - e. A ureteral stone may do the same but will usually give a shadow itself.
 - f. Displacement of the ureter may occur with any retroperitoneal mass.

F. *Findings After Uroselectan Injection*

- 1. *Normal appearance.*
 - a. Within 15 minutes after injection:
 - (1) Dense kidney shadows.

- (2) Faint shadows of pelvis and upper ureter.

b. *Within 45 minutes after injection.*

- (1) Kidney shadows denser.
- (2) Definite shadow of pelvis and upper ureter.
- (3) Shadow of lower ureter. Middle of ureter is not usually seen.
- (4) Distinct bladder shadow.

2. *Pathological findings.*

- a. Delayed appearance of shadow of pelvis.
- b. No shadow of pelvis or ureter seen (non-functioning kidney).
- c. Usual findings of pyelogram.

G. *Normal Appearance of the Cystogram*

The bladder is variable in size, rises up out of the pelvis as a round organ with smooth contours. It must be filled up completely to show the normal appearance.

H. *Pathological Changes in Cystogram*

- 1. *Hypertrophied prostate* will give a defect in the inferior portion of the shadow protruding into it.
- 2. *Tumors* of the bladder if large will produce a defect in the shadow or a thinning out at one point.
- 3. *Trabeculation* produces a fine irregularity of the contours.
- 4. *Diverticula* of the bladder appear as pouches projecting beyond the lumen. They may appear as densities along the outer margins of the bladder in the antero-posterior position but are frequently on the posterior wall and can then be shown only in the lateral view or with the patient sitting up.
- 5. *Hernia* of the bladder through the inguinal ring can be seen in the sitting position.

I. *Value of X-ray Examination of the Urinary Tract*

The roentgen examination of the urinary tract is of extreme importance. The demonstration of calculi, tumors, and other surgical conditions can best be made in this way. On the other hand, in the medical diseases of the kidney such as glomerulonephritis, nephrosis, etc., the x-ray findings are of little value.

MISCELLANEOUS PREGNANCY

A. *Value of Roentgen Examination*

1. The *diagnosis* of pregnancy can be positively established. The most certain positive sign is the visualization of the fetal skeleton in the abdomen. This can be done with excellent technique under exceptional circumstances as early as the third month. It can be done in most cases by the fourth month.
2. The *differentiation* between a tumor mass and a pregnancy can often be positively made by roentgen examination to determine the presence or absence of a fetal skeleton.
3. The *position* of the fetus can be accurately determined by the relationship of the head and spine to the pelvis of the mother.
4. The *number* of feti can be determined.
5. *Abnormalities, monstrosities* and *death* of the fetus can frequently be diagnosed before parturition by the appearance of the skull.
6. *Inequality* between the size of the head and that of the pelvis may be determined roughly.
7. The *maturity* of the fetus can be made out with a fair degree of accuracy by the size and the development of the epiphyses. This is especially true with regard to the distal epiphysis of the femur which, if present, indicates the end of the ninth or beginning of the tenth month.

UTERO-SALPINGOGRAPHY

A. *Method of Examination*

An iodized oil is injected into the cervix uteri and fills the corpus uteri and passes through it into the fallopian tubes. A film taken will thus reveal the contour of the cavity of the uterus and the tubes and indicate whether the tubes are patent by the passage of the opaque substance into the abdomen.

B. *Value of the Method*

1. *Abnormalities* of the *uterine cavity* can be determined such as submucous myomata, bicornate uterus, infantile uterus, etc., by the distortions of its contour.
2. *Distortions* of the tubes from disease or pressure of external masses can also be thus determined.
3. *Patency* of the tubes can be diagnosed by the appearance of droplets of the iodized oil in the shape of small rounded densities in the pelvis within a short time after the injection. Occasionally they do not appear for 24 hours.

PNEUMOPERITONEUM

A. *Method of Examination*

Air oxygen, or carbon dioxide are injected in large quantity (1,000 to 1,500 cc.) into the peritoneal cavity to produce contrast between the various abdominal organs and other soft tissue structures in the abdomen. Examination is made in a variety of positions.

B. *Value of the Method*

1. *Adhesions* between the abdominal organs and the abdominal walls, between themselves, between the diaphragms and the liver and spleen can be clearly delineated.
2. *Enlargements* and *distortions* of the various abdominal organs can be clearly visualized by reason of the contrast furnished by the gas.
3. *Tumors* or *masses* can be visualized and localized.
4. *Gas* may be *injected* into the uterus and tubes and its detection in the abdomen by roentgen examination indicates the patency of the tubes.

CALCIFICATIONS AND CALCULI

A. *Calcification of Arteries*

This can be clearly made out on x-ray examination of the limbs, in the pelvis and strikingly in the abdominal aorta by examination in the lateral position. The shadow of the calcified arteries is usually irregular, tube-like, and denser around the outer margins.

B. *Calculi in the Salivary Glands*

Occasionally a calculus can be detected in the submaxillary region by examination in the lateral position.

C. *Calculi in the Pancreatic Duct*

Rarely a stone may be made out near the 2nd portion of the duodenum which may be in the pancreatic duct.

D. *Calcification of the Thyroid.*

This may produce a rounded, non-homogeneous, very irregular shadow in the cervical or sub-sternal region.

E. *Calcification of Mesenteric Glands*

These are not uncommon and their presence usually indicates a diagnosis of tuberculosis. They appear as irregularly shaped or oval, non-homogeneous densities anywhere in the abdomen.
The End.

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PUT THEM TO BED

At this time of year, when colds are prevalent, we should stop, look, listen, think clearly, act wisely and play safe.

Head colds, chest colds and sore throats, have all been known as "common colds" to the laity, and taken for granted as one of winter's unavoidable experiences. Epidemics of influenza have given us the more specific names of "grip," "la grippe" and "flu," and during the past few years, another and more high sounding name has been added to the nomenclature by reason of the diagnostic epidemic of "sinus trouble" that has swept our land. Patients, with that "oh-my-operation" complex, eager for novelty, now venture to show their up-to-date acumen by use of this more imposing addition to their vocabulary at the slightest pretense. Whatever of jest there may appear to be in this, it certainly shows their desire to help in clarifying this mysterious nebula, and co-operate in its solution by giving to the common cold that dignity of position which its serious consideration demands. It testifies, too, to the respect for this condition that they expect the medical profession to have.

Acute, upper respiratory symptoms are often the forerunners of serious involvement in other parts; pneumonia, nephritis and appendicitis, not infrequently follow. After the shock of an unexpected death, how often do we not hear that the trouble had been looked upon "only as a common cold," and surprise is expressed at the fatal termination of what was supposed to have been a trifling ailment. Alas, even trifles have

their perspectives! Remote effects should surely not be lost sight of in this day of so much focal infection talk. Chronic absorption, with its train of slow destruction, and almost certain invalidism, is best prevented in the period of its inception. There must, in every such case, have been an original implantation of the seed, and that should have been the time for greatest watchfulness, before incubation had gone too far, and before its products were carried to some vital organ or lodged in an unretrenchable position to brew its poison, undisturbed, for further dissemination throughout the body.

Prudent physicians have all this in mind and realize the significance of the common cold, especially when accompanied by fever, take precautions early, and PUT THEM TO BED.

A.E.H.

THE TWENTY-FIFTH CHRISTMAS SEAL
SALE ANNIVERSARY

Twenty-five years of Christmas seal sales. It is a long enough time to either fail miserably or succeed famously. The National Tuberculosis Association, which sponsors the seal sale movement, has grown during this period from a wild-eyed, struggling infant with small hopes and little power, to a veritable giant in the conquest of disease. In 1906, when Emily P. Bissell, the American mother of the first Christmas seal sale, was confronted by a group of Wilmington physicians asking financial aid for the care of tuberculous patients, the great possibilities of this penny seal could hardly have been dreamed of. The interest at that time was merely a local one. The tuberculous in Wilmington needed help; they needed it badly, and the most likely person to aid in the problem was Miss Emily Bissell. She had

recently learned of the Christmas seal idea of Einar Holboell, a Denmark post office clerk, and she saw in it a practical application for a much-needed relief. The story of Miss Bissell's struggle to initiate this movement was told by her at the last meeting of the National Tuberculosis Association at Syracuse, New York. It was a tremendously impressive account of a work well done. The local success of her efforts lead to a gradual extension of the work until step by step, and year by year, it reached its present goal. The National Tuberculosis Association now stands as the largest national organization of its kind for the combating of a single disease.

It is satisfying to remember that this movement, dedicated to the relief of human suffering, has at all times been generously supported by the medical profession. The active part taken in this work by such able physicians as Osler, Trudeau, Welch, Bowditch and Flick makes us mindful of the fact that its purposes are in accord with the highest ideals of our profession. Aims of the Christmas seal organizations are mostly educational objectives. Their attempts are to familiarize the public with the nature, dangers, treatment, and curability of tuberculosis. It is well that people know these things for without such knowledge they become the prey of quacks and quackeries resulting not only in the loss of money, but in the loss of that more precious thing, health, and even life itself. There is no disease that has been the source of more despicable charlatan practices than tuberculosis. The unsuspecting consumptive is ever ready to spend his all for relief of his distressing ailment. The quack knows this and he builds upon it. He finds himself in a lucrative field, filled with shining silver. When quackery loses this commercial value, it loses its soul, and this will happen when sufficient light is given the public to see facts rather than fancies. The Christmas seal with its educational message aims to fill this need. Its work fits in well with the mission of the physician whose duties now consist in the prevention as well as the cure of disease.

As a protector of community health, the physician should take an active part in Christmas seal work. Better equipped with a knowledge of disease than any other member in the community, the doctor here should be a leader and not a follower. He should be quick to recognize and anxious to realize the benefits and possibilities of anti-tuberculosis work.

ARNOLD S. ANDERSON, M. D.

THE STRATEGY OF HANDLING PEOPLE

Much has appeared recently in the lay and medical press with reference to the strategy of handling people. Leaders in business and political organizations have recognized for years the important fact that people are different and must be treated differently.

Successful salesmen often take the pains to become familiar with and keep a card index of the personal interests, habits, hobbies and opinions of his customers. It has been said of Theodore Roosevelt that at banquets, he usually took the trouble to post himself ahead of time about the affairs of men in attendance, whom he had never seen before. He was therefore ready to fascinate these men.

It is encouraging to note that the medical profession is taking an interest in the relation of the physician to the patient and the public. "Art and Personality in Surgery" and "Humanity in the Hospital" are titles of recent editorials in two of our foremost surgical and medical journals. At the University of Minnesota, the senior class has had weekly lectures for more than a year, concerning the business and the art of the practice of medicine.

The profession as a whole has been slow to appreciate the value of a knowledge of human nature. The medical practitioner has often contended himself with the thought that the advance in requirement for medical practice has been so rapid that he had to devote himself to science rather than to humanity. A great surgeon, when parting with his assistant gave this admonition, "Seventy-five per cent of your success in life will depend upon your ability to handle people, twenty-five per cent on your knowledge of medicine. Try to excel in both." Because the majority of medical men depend directly upon the public for a livelihood, it would be well for them to keep this admonition in mind. M. W. Forbush, writing in the *Journal of the American Medical Association* about the physician, stated "He is too matter of fact in his diagnosis, too dependent upon *materia medica* for his cures. The modern physician ought to realize more deeply and minister more wisely to the ignorance rather than only to the sickness of the average person."

A pleasing personality, a quality difficult to analyze, is not possessed by all. It is composed of character, intellect, will and feeling, and has been defined as the power to make an impression upon the soul of another. The effect of this impression influences the patient from his first visit until he is considered cured.

It is not necessary to be unscientific to win the patient's liking and co-operation. The modern physician is better prepared today than ever before to diagnose, treat and prevent disease, but he must be humanized to gain the complete confidence of the public.

The physician, who can include in his training the understanding of human nature and will develop a pleasing personality, will serve best and profit most.

M. N.

THE PROPHYLAXIS OF GOITER

Prophylaxis for a morbid condition would seem to be dependent upon a definite etiology. However, smallpox has been prevented effectively, without knowing the causative agent, and quinine was used in malaria before the discovery of the plasmodium. The prophylaxis of goiter depends upon the empirical fact that iodine is of value even though the etiology of goiter is not known.

Recently in this country, iodine has been used extensively in salt. If it is to be used in this manner, the quantity of iodine should be kept well within the physiological limits of 5 mg. of potassium iodide in a kilogram of salt. In the normal consumption of salt, for an individual, this would correspond to approximately 15 mg. per year.

Control, however, is necessary in the general prophylaxis by means of cooking salt. This is impossible, because there can be no individual control of the whole population. The principal objection is the danger of *constitutional iodism* or hyperthyroidism. Science is not yet sufficiently advanced to institute such a general campaign against goiter.

The only place where general prophylaxis can be instituted on a large scale, is in the schools. Here the condition of the children can be determined before prophylaxis is instituted and the children can be and should be re-examined at least once a year. Reports from these examinations should be summarized. A uniform method should be adopted for all the examinations, as well as the reports, so that the medical officers can co-operate without confusion. In the schools, a weekly dose of 1 or 2 mg. of iodine can be used. This has proved sufficient and harmless in Switzerland, where an efficient organization exists for the prophylaxis of goiter. This amount can be used for about one year. If the examinations show that it is necessary to continue iodine in individual cases, the administration should be regarded as treatment, rather than as prophylaxis.

M. N.

PROCEEDINGS MINNEAPOLIS CLINICAL CLUB

Meeting of October 8, 1931

The regular monthly meeting of the Minneapolis Clinical Club was held on Thursday evening, October 8, 1931, in the Lounge of the Medical Arts Building. After dinner the meeting was called to order by the President, Dr. F. H. K. Schaaf. There were 16 members and 1 visitor present.

Minutes of the May meeting were read by the Secretary and approved as read. Minutes of the Council meeting preceding the evening meeting were read and approved.

The scientific meeting consisted of the following papers and case reports.

DR. FLOYD GRAVE reported on "A Laboratory Test for Pregnancy."

ABSTRACT

A satisfactory laboratory test for early pregnancy has long been desired. Numerous tests have been devised but later discarded. The latest tests, those of Ascheim and Zondek on immature female mice and of Friedman on rabbits, depend upon the action of a pituitary hormone which is

excreted in the urine of a pregnant woman. I have had no experience with the Ascheim-Zondek test but have had such surprising success with the Friedman test that I consider it well worth reporting. Various writers report 98 per cent successes with this method. My series is not very large, only about 45 cases. So far, I know of no failures.

Technic. The selection of rabbits is very important. In my series I have used rabbits 12 weeks old and weighing about 4 pounds. I have procured them from sources where males and females have been segregated while quite young. I consider this the most important item of success.

Probably the next item of importance is the specimen of urine to be used. I have insisted upon a fresh morning specimen, and have used it as soon as possible. The specimen need not be catheterized. If not able to use it immediately, it is placed on ice. I have not used a specimen more than six hours old.

The urine is injected into the marginal ear vein of the rabbit. The usual advice is to use 5 to 11 cc., sometimes making two or three injections a few hours apart. I have made only a single injection in my series, using 8 to 10 cc. Toxic urines have been met with but my animals have had no ill effects from this amount. They appear somewhat ill, but for a few minutes only.

After 48 to 60 hours an examination is made of the rabbit's ovaries. (Specimens were passed around.) Positive tests are very striking. Numerous large hemorrhagic follicles are present in each ovary and the Fallopian tubes seem also to be more than usually enlarged and congested, while those of the negative cases show no changes at all. The follicles are pin-point in size and barely visible. Fallopian tubes are usually small.

Periods of Pregnancy Where Applicable. The test is applicable in all periods of pregnancy except probably up to the 20th day. I have to take this from other reports. It continues positive until about the second or third day of the puerperium, or until all the fetal elements have been detached from the body. It is valuable in diagnosing ectopic pregnancy; however, it might be possible to get a negative if the embryo had become detached from its implantation site. I have had only one ectopic pregnancy and it gave a positive test.

Chorionomas and hydatidiform moles give a very strong positive. I have had no experience with these, but the test may be used to determine whether or not such a tumor has been completely removed by surgical operation.

I consider this one of the most reliable tests performed by a laboratory. Certainly mistakes will appear now and then, but I believe they will be traced to some error in technic, to unsegregated animals, or to some other traceable error.

DISCUSSION

DR. MOSES BARRON: Dr. Grave, as I understand, said that when this reaction is positive there is this hemorrhagic condition and the change in the ovary; I would like to ask what happens or what change takes place when urine from a non-pregnant woman is used.

DR. GRAVE: You do not get any change at all in the rabbit's ovaries.

DR. BARRON: Then not only the ovulation but also the hemorrhagic condition is a part of the organic reaction.

DR. GRAVE: Yes. In a positive reaction there are always a number of corpora hemorrhagica in each ovary.

DR. WILLARD WHITE: I would like to ask if a negative result is dependable; can you depend on the fact that the patient is not pregnant?

DR. GRAVE: Yes, providing the rabbits used are the proper age.

DR. WHITE: If there is placental tissue remaining, are you likely to get a positive? Would not that test be of value in certain cases of bleeding, where there was a question of the patient having been pregnant, which might be an important point. I recall a patient of mine recently who was just about the age of the menopause and when she had gone slightly over her period there was a question of fibroid or pregnancy, and when there was a swelling in the region of the tube we had to consider the question of an ectopic.

DR. GRAVE: I think that is just where this test is of the greatest value—on an ectopic. But if the placenta had detached from the body for some length of time you might get a negative reaction.

DR. BEARD: Dr. Grave has checked five cases for me. One was a suspected pregnancy, which was positive; another was a questionable ectopic, the patient was operated and the surgeon found the ectopic; the other three were young women who wanted to know whether they were pregnant and the tests were positive. From these five cases there have been five correct interpretations.

DR. GRAVE: I am very glad to hear that. I have checked nearly all my cases with the referring physician and have found all correct so far.

DR. CAMP: Would the blood of the patients give you this test as well as the urine?

DR. GRAVE: I suppose it would but I believe it would be rather toxic. It is probable that the hormone is stronger in the urine than in the blood.

DR. FANSLER: How early did you state that this is positive?

DR. GRAVE: It is reported as being positive about the 20th day of pregnancy and before the first menstrual period is missed. I have had none this early.

DR. WHITE: Do you think the test has gone on long enough to be considered accurate now?

DR. GRAVE: There is a good deal about it in the literature now, and there 98 per cent are reported as being correct; I think the other 2 per cent is human error and directly traceable to the person doing the test. Some errors have been found when the patients were pregnant but the specimens were taken too early and tests made four or five days later would be positive. There are errors from using unsegregated animals, or in using rabbits that are too young. Everything being under proper control, I think there should be no errors. However, there are a number of details that have to be looked after. Everything considered, I think this is one of the most reliable tests performed by a laboratory.

DR. ERLING HANSEN reported a case of Hidden Tabes, as follows:

The case is that of a woman, a housewife, 33 years of age, who a year ago last spring during pregnancy had an acute mastoiditis and was operated for the mastoid infection. Some time later she presented herself with a complaint that her hearing was gradually diminishing and that has continued. All the functional tests show the nerve type of deafness, apparently some toxic agent acting on the 8th nerve. She had no other

symptoms until just a short time ago when she came to the office. She said she had broken her glasses and wanted her eyes checked before she had new lenses made. At that time I found that she had Argyll-Robertson pupils, which certainly were not there previously. During the search for etiological factors there was nothing found; the blood Wassermann was negative and no toxic agent was present. The blood Wassermann was repeated when this eye finding came to light and was again negative.

The patient has three healthy children, including the last baby. Her husband is negative and never had any infection. Going back in the history, we found that her sister is totally deaf with apparently a nerve type of deafness. Dr. Hannah saw her for a complete neurological examination and his findings were entirely negative.

Examination of the spinal fluid was suggested, and at that time it came out that both the mother and sister had had spinal fluid examinations.

In the personal history we find that 25 years ago, or when she was 8 years old, she was hospitalized by an orthopedist for some joint trouble and then had some eye trouble which necessitated her being placed in a dark room. In trying to find a trace of the old records, we find they were lost, but in recalling the case her attendant at that time said it was his impression that she had a luetic arthritis at that time. The man who took care of her eyes is dead and we have no way of getting his records in the case.

Slit lamp examination revealed no old iritis which she might have had at that time. Aside from that, the vision is normal, the fields are normal, and the only finding was this accidental one of change in the pupillary reaction.

The spinal fluid was examined and Dr. Grave reported that all the tests were positive and showed the typical tabetic curve. Dr. Hannah remarked that it was just another one of those cases that he felt required more study than a blood Wassermann in spite of the examinations she had already had. He mentioned one case with pupil changes which Dr. Nixon had seen, with no etiology established. The man returned to the office in about six years with *tabes dorsalis* and with a spinal fluid strongly positive. His feeling was that a much earlier diagnosis might have been made, if a spinal puncture had been done.

This apparently is a congenital lues which shows up at the age of 33 with nerve involvement and no previous history with the exception of an illness at the age of 8.

It really calls for a very thorough study of all these cases. We know there are very few cases

of Argyll-Robertson pupil that come from other infections. There are a few from epidemic encephalitis, syringomyelia, multiple sclerosis and a few of the intoxications, but the great preponderance are from syphilis and this should certainly be definitely ruled out in all cases if at all possible.

DISCUSSION

DR. SCHAAF: And don't forget the Argyll-Robertson pupil that we see occasionally in diabetics. I have seen two of them.

DR. GRAVE: This case makes me wonder a little about the Wassermann reaction. I wonder if there is a possibility that one laboratory's antigen may not act on one strain of syphilis, and that of another laboratory may not.

DR. SCHAAF: I think we do get contradictory reports because some laboratories do not use enough of the spinal fluid in the test. You will find in tabetics that many times 1 cc. is required to give a positive reaction, while in paretics we usually get a reaction with 1/10 of a cc. They all should specify whether they use 1/10, 1/2 or 1 cc. in doing the test.

DR. WHITE: As I understand it, this patient and the patient's sister and mother had lues and presumably this was congenital. I wonder if the children of these patients will develop symptoms.

DR. SCHAAF: In connection with congenital lues appearing in children, I recall one patient who had an iritis early in life, a positive blood Wassermann and spinal fluid, but every one of her children who were born before she had had any treatment has a negative blood and spinal Wassermann. Again, in another case where the father has a tertiary lues, the wife has both a negative blood and spinal fluid Wassermann, but their sixteen year old child recently developed a specific iritis.

DR. ARCHIE BEARD reported a case of Epilepsy occurring during Periods of Hyperglycemia.

This evening I wish to report a rather interesting case of a young lady eighteen years old who has had periods of convulsions which usually occur at night. This condition developed the first two to three years of her life. Until the last year these periods were apt to occur only at night or early in the morning. During the last few months she has had two attacks in the day time, which have not been severe.

At these times she is very apt to have a preceding period of fifteen to twenty minutes when she has a very pleasant sensation, feeling that she is perhaps in a medieval garden where she is able to detect the sweet odor of some flower or perfume. At night she is apt to dream of the same situation. At no time has there been any frightening or upsetting circumstances. Following this early phase of the attack she is very apt to become

unconscious. Usually there is some twitching of her body. At no time has there been any loss of sphincter control. She has never injured her tongue or mouth during these attacks. On one or two occasions she has fallen out of bed. These attacks last about five minutes.

Both her father's and mother's family histories are negative for epilepsy and diabetes.

Her past history is negative. She has had whooping cough, scarlet fever, and mumps. The tonsils have been removed; otherwise, there have been no operations. She has taken luminal at times with fair results in eliminating the attacks over a longer period of time. There are no symptoms referable to the cardiorespiratory, gastrointestinal, and genitourinary tracts. Menstruation began about two years ago. There were two to three regular periods with very little pain. Since then they have not been present.

Her habits are good. She uses no tea, and rarely coffee. Her mother states she is apt to have periods of excessive intake of carbohydrates, especially candy. This will be discussed more fully later. She retires around 9:30 p. m. and rises at 7:30 a. m. She may not realize that she has had an attack during the night. Her mother states that she awakens very tired and restless after an attack.

Physical Examination: The patient is a well-developed, and well-nourished young lady. Standard weight is 140 pounds; present weight is 115 pounds. The skin is negative. The eyes react normally to light and distance, and are regular. Extraocular movements are normal in all directions. Eye grounds are negative. Visual fields are within normal limits. The nose is negative. The teeth are in excellent condition. The lower jaw is somewhat of the pituitary type. The arms and legs are longer in proportion to the rest of her body than one would expect. In the last few years there has been no change in the size of her hands, feet, or skull. The thyroid is normal in size, shape and position. There are no adenomas present. There is no evidence of generalized adenopathy. The body is of the Glenard type. The lungs are negative throughout. The heart is normal in size, shape and position. The rate is 78 and regular. There are no murmurs. The abdomen is negative. The reflexes are normal. Pelvic examination is negative except for the fact that the uterus is very small and hard. The cervix is very long; the ovaries are palpable and seem normal.

The blood shows a normal red blood count, white blood count, differential, and hemoglobin. The Wassermann is negative. Urine passed in

my office the first day of examination was negative. Blood sugar is 0.079% per 100 cc. of blood; blood urea, 16.8 mg. per 100 cc. of blood; blood calcium, 10.38 mg. per 100 cc. of blood. Blood pressure is 110/70. Gastric contents (Ewald test meal) were negative.

Because of the fact that there was a suggestive low blood sugar found on the first examination, a glucose tolerance test was given with 100 grams of glucose. The report of the test is as follows:

Hour	Blood	Urine
1	0.09%	0
2	0.146%	0
3	0.190%	+++
4	0.136%	0

At this time she stated that sugar had been found in her urine when she was a child of ten or twelve years old, but that none had been found since that time.

X-ray of the skull for the possibility of any areas of tumors, and the X-ray of the sella turcica for pituitary disease are negative. Basal metabolism (first report) is -22%; one week later it was found to be -25%. This being the first examination, the low basal metabolisms were not regarded with any abnormal significance because of her age and menstrual history.

She was then placed on a high ketogenic diet. She stayed on this diet for a period of three to four weeks, at the end of which time she reported to my office stating that she was having peculiar attacks before her meals. These attacks consisted of shakiness, weakness, and excessive perspiration. She stated also that she had an abnormal craving for carbohydrates, and that she refused to stay on the diet any longer. The blood sugar at this time was 0.060%. In order to gain the confidence of the patient I allowed her to go off her diet. Within the next 24 hours she was taking a very high carbohydrate diet of sweets and candies. That night she had her first attack since being on her diet. This attack was of the same severity as the former ones. The morning and night specimens of urine collected before and after her attack showed a trace of sugar in the morning specimen. She was then told she must return to her high ketogenic diet. She was given a diet of 65 grams of carbohydrates, 90 grams of proteins, and 250 grams of fats. After a period of two weeks, she returned stating that her attacks of weakness had recurred; she demanded more carbohydrates in her diet. She was unable to control her craving for candy, and within the next 24 hours she consumed a considerable amount. The next night she had her second attack since being under treatment. Her

glucose tolerance test was repeated. It was essentially the same, showing a trace of sugar with a hyperglycemia in the third hour.

Being rather bewildered in my findings and trying to be more lenient in regard to her diet, I placed her on a diet of 150 grams of carbohydrates, 90 grams of proteins, and 250 grams of fats. On this diet she showed a trace of sugar at the end of a week. For that reason she was given 5 units of insulin each noon. Following this treatment the urine has been entirely negative for sugar. She is more satisfied with her diet; no attacks have occurred. At the time of this report she has been on her diet three months without any further attacks.

Because of her low basal metabolism, which was found on three other occasions to be below -20%, she was next given a small amount of thyroid three times a day. Gradually her basal has returned to -8%.

At no time has her pulse been under 100. The specific gravity of the urine has consistently been below 1025.

Conclusions: The case of this girl opens up the discussion for some interesting possibilities. She probably has a hypoglandular condition of her thyroid gland, pituitary gland, and ovaries. The possibility of overly-active islands of Langerhans must be considered. The possibility of some tumor in the region of the base of the brain or pituitary gland must be considered.

I have hopes that her diet, insulin, and gland therapy will prevent further attacks.

DISCUSSION

DR. BARRON: How can she stand such a tremendous amount of fat?

DR. BEARD: I do not know but she seems to get along very well.

DR. BARRON: There are certain factors about it that would suggest a neoplasm, especially the fact that she has these prodromal symptoms.

DR. SCHAAF: Had she been on a special diet when she came to you?

DR. BEARD: No; she had a hypoglycemia and no sugar in the urine.

DR. SCHAAF: And still later on an ordinary diet containing a normal amount of carbohydrates, she showed sugar?

DR. BEARD: Yes. There is no history of epilepsy in the family, which has been gone into quite thoroughly.

DR. MCCARTHY: Is she still taking thyroid?

DR. BEARD: Yes.

DR. R. C. WEBB: In this connection, although the condition is just the opposite of Dr. Beard's case, I recently had a patient brought to my attention where epileptiform attacks occurred and hypoglycemia was given as the cause of the attacks, due to hyperinsulinism. I am wondering if you have found that condition to occur often?

DR. BEARD: The attack suggests hypoglycemia. A man walked into my office today, who, the last two mornings when he got out of bed, has fallen to the floor. His wife said he twitched and, while there were no other symptoms, he looked to her as though he had had an attack of epilepsy. He is a diabetic. Of course in hyperinsulinism we get the same picture, or low blood sugar.

DR. WEBB: This man I speak of was not a diabetic; he was alleged to have a hypersecretion of his pancreas.

DR. BEARD: If their attack is severe enough, and they become unconscious they usually take on symptoms suggestive of epilepsy, but it is not a true type.

DR. MOSES BARRON reported a case of Subacute Bacterial Endocarditis.

DR. C. E. RUDOLPH (by invitation) addressed the Club on "The History and Symptoms of Socialized Medicine." Dr. Rudolph has been a very great student of this trend in medicine and gave an exceedingly interesting discussion of the subject.

The meeting adjourned.

H. BRIGHT DORNBLASER, M.D., Secretary.



NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Dr. M. C. Bergheim, Hawley, Minn., will spend the next few months in California.

Dr. Arthur T. Coan, Anoka, Minn., was recently married to Miss Frances E. Anderson of Duluth.

Dr. Lester Hegg, formerly of Decorah, Iowa, has opened offices for general practice at Beresford, S. D.

Dr. R. J. Stein has moved from New Salem, N. D., to Graceville, Minn., where he will continue general practice.

Dr. A. H. Parks was elected Chief of Staff of the Asbury Hospital, Minneapolis, at the annual meeting held this month.

Dr. M. M. Loucks, a graduate of the University of Minnesota, has opened offices for general practice at Madison, S. D.

Dr. L. T. Lohrbauer, a son of Dr. E. Lohrbauer of Lakota, N. D., has opened offices for general practice at Grand Forks.

Dr. Morris Greenberg, a recent graduate of the University of Minnesota, has opened offices for general practice at Wilton, N. D.

Dr. Helen C. Roberts, one of Montana's outstanding physicians, who resided at Great Falls, died recently at the age of 70 years.

Dr. Geo. McIntyre, Minneapolis, has moved to Portland, Oregon, where he will continue in his specialties of eye, ear and throat practice.

Dr. Harry P. Ritchie, St. Paul, was elected president of the Western Surgical Association at the annual meeting recently held at Denver.

Dr. W. C. Rydberg has purchased the practice and equipment of Dr. D. Townsend, Brooten, Minn., and will continue his practice in that city.

Dr. Emil S. Geist, Minneapolis, was among the speakers on the program at the annual meeting of the Illinois Medical Society held at Chicago, last month.

Dr. D. W. Francis, who has been in active practice at Morristown, Minn., for the past five years, has recently associated himself with the Faribault Clinic.

John Gerhard Halland, Motley, Minn., license revoked November, 1931, provocation being based on Dr. Halland's habitual indulgence in the use of drugs.

Dr. Percival Bailey, Chicago, was a guest speaker at the last meeting of the Hennepin County Medical Society, his subject being "Brain Tumors."

Dr. P. T. McCarthy, Missoula, Mont., was the principal speaker at the December meeting of the Mount Powell Medical Society. A large attendance was present.

Dr. L. B. Wilson of the Mayo Clinic, Rochester, was elected president of the Association of America Medical Colleges at the annual meeting held at New Orleans.

Dr. E. G. Balsam, Billings, secretary of the Montana State Medical Society, attended the annual meeting of the secretaries of Medical Societies at Chicago last month.

Dr. H. W. Froehlich, who has been in active practice at Thief River Falls, Minn., for the past 17 years, has decided to locate in Minneapolis and will open his offices at once for general practice.

Miss Agnes Thompson, who has been in charge of the Madison, S. D., Hospital for the past five years, has resigned and will accept a position on the staff of the Sioux Valley Hospital at Sioux Falls.

Dr. John D. Camp of Mayo Clinic, Rochester, Minn., was elected third vice president of the Radiological Society of North America at its seventeenth annual convention in St. Louis this month.

The first fall meeting of the members of the Eastern Minnesota Medical Society was held at Mora, Minn., with Dr. M. S. Henderson, president of the State Medical Society, as guest speaker.

Maternity Hospital, Minneapolis, celebrated its forty-fifth anniversary this month. Each patient was presented with a bunch of red roses, this being the favorite flower of the founder, Dr. Martha G. Ripley.

The joint banquet of the Lymanhurst staff, the Minnesota Public Health Association and the Hennepin County Tuberculosis Association held at the Nicollet Hotel on December 2, was attended by over 400 guests.

Dr. C. E. Bennett, who has been practicing medicine at Aneta, N. D., for the past 35 years, died recently from a sudden heart attack. Dr. Bennett was 73 years of age and is survived by his wife and two children.

David Gordon, Minneapolis, license revoked November, 1931, as a result of his conviction on nine counts of violating the Harrison Act. Dr. Gordon was sentenced to eighteen years imprisonment at Leavenworth as a result of his plea of guilty to the above charge. This is his second offense.

The new \$50,000 addition to St. Joseph's hospital, Dickinson, N. D., has been opened for public inspection. The new wing is ready for partial service and when additional furniture is added the hospital will have 110 beds, making it one of the best equipped institutions of its kind in western North Dakota.

A new medical society has been organized at Fairmont, Minn., for the convenience of the doctors of Southern Minnesota and Northern Iowa. Officers for the coming year are: Dr. H. B. Boyesen, Welcome, president; Dr. J. J. Heimark, Fairmont, vice president; Dr. Victor U. Vaughan, Truman, secretary and treasurer.

Dean E. P. Lyon, of the University of Minnesota, and Dr. L. P. Wilson, of the Mayo Clinic, were delegates at the annual meeting of the American Medical Colleges at New Orleans this month. Dean Lyon presented a paper on "Subject in the Medical Curriculum," and Dr. Wilson, on "Research in Graduate Medical Schools."

Dr. S. P. Miller of the medical school at the University of Minnesota will test 200 students to determine their fitness to enter the practice of medicine. The examination, which is given at most medical schools in the country, covers the sciences studied in pre-medic work and is known as the medical school aptitude test of the Association of American Medical colleges.

The Sioux Falls Medical Society held their annual meeting on December 8th, with the largest attendance of the season. Speakers for the evening were: Dr. S. A. Slater, Worthington, Minn., "The International Post-Graduate Tour of Europe." Dr. T. J. Billion, Sioux Falls, "Treatment of Hemorrhoids," and Dr. J. B. Gregg, Sioux Falls, "Foreign Bodies in the Lung."

Dr. C. H. Nelson, Billings, Mont., was elected president of the Yellowstone Valley Medical Society at their annual meeting held in that city last month. Other officers named are: Dr. H. H. Culbertson, Vice President; Dr. G. M. Russell, Secretary, and Dr. J. I. Wernham, Treasurer. Dr. H. E. Armstrong, Dr. L. W. Allard and Dr. C. F. Watkins were elected to the board of censors.

Dr. Edwin J. Simon of Swanville, Minnesota, was awarded the 1931 prize of \$250.00 offered by the Minnesota Society of Internal Medicine. In the course of carrying on a general practice in a somewhat isolated community Dr. Simon, a graduate of the University of Minnesota in 1924, has produced a complete and scholarly monograph on primary carcinoma of the lung. This prize is offered annually to the practitioner of medicine in the state not a member of the Society, who has made the most valuable contribution to medical knowledge.

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The programs for the month of January will be as follows: January 6th—Personal Hygiene—Physical Activity. January 13th—Causes of Bad Breath. January 20th—Three Score and Ten Approaches. January 27th—Warning Signs of Cancer.

The South Dakota eye, ear, nose and throat specialists held their annual mid-year meeting at Huron, S. D., with the adoption of a constitution and by-laws as the chief item of business. Three councillors were elected to examine applicants for membership. Organized only last spring, the South Dakota Academy of Ophthalmology and Otolaryngology is a section of the state medical association. Papers were presented by Drs. A. C. Dean, Hot Springs; Grove Baldwin, Sioux Falls; J. Douglas Alway, Aberdeen, and R. A. Kelly, Mitchell. Officers of the Academy are Drs. L. N. Grosvenor, Huron, president; J. B. Gregg, Sioux Falls, vice-president; and H. L. Saylor, Huron, secretary-treasurer.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS, NOVEMBER 10, 1931

BY EXAMINATION

(October)

Name	School and Date of Graduation	Address
Anderson, Carsten Russell	U. of Minn., M. B., 1930	General Hospital, Minneapolis, Minn.
Bacon, Frank S.	U. of Minn., M. B., 1930; M. D., 1931	4027 Pillsbury Ave., Minneapolis, Minn.
Brink, Adlai Alvin	Northwestern U., M. B., 1930; M. D., 1931	Donaldson, Minn.
Brutsch, George Charles	U. of Minn., M. B. and M. D., 1931	2550 Bloomington Ave. S., Minneapolis.
Cahill, George Byron	U. of Minn., M. B., 1930	General Hospital, Minneapolis, Minn.
Cain, Edmund Francis	U. of Alberta, M. D., 1929	Mayo Clinic, Rochester, Minn.
Carlson, Arvid Edward	U. of Minn., M. B., 1931	Receiving Hospital, Detroit, Mich.
Costello, Russell Thomas	Detroit Col. of Med. and Surg., M. B., 1930; M. D., 1931	Mayo Clinic, Rochester, Minn.
Curry, Fillmore Smith	U. of Mich., M. D., 1929	Mayo Clinic, Rochester, Minn.
Decherd, George Michael, Jr.	U. of Minn., M. B. and M. D., 1930	General Hospital, Minneapolis, Minn.
Dunlop, John Gaskin, Jr.	Queens U., Can., M. D., 1929	522 N. W. 3rd St., Rochester, Minn.
Emmett, John Lester	Northwestern U., M. B., 1930; M. D., 1931	Mayo Clinic, Rochester, Minn.
Fiala, Martin Josef	Western Reserve U., M. D., 1930	1428 London Road, Duluth, Minn.
Garten, Joseph L.	U. of Minn., M. B., 1931	Ancker Hospital, St. Paul, Minn.
Gibson, Glen Gregory	St. Louis U., M. D., 1930	Mayo Clinic, Rochester, Minn.
Hale, Donald Emerson	U. of Pennsylvania, M. D., 1929	Mayo Clinic, Rochester, Minn.
Hargrave, Robert Lee	Tulane U. of La., M. D., 1928	1301 1st Ave. S. W., Rochester, Minn.
Hebert, Warren Harang Joseph	Tulane U. of La., M. D., 1930	Mayo Clinic, Rochester, Minn.
Hines, Edgar Alphonso, Jr.	Med. Col. of So. Car., M. D., 1928	Mayo Clinic, Rochester, Minn.
Hoerner, Miles Tischer	U. of Cincinnati, M. B., 1929; M. D., 1930	Mayo Clinic, Rochester, Minn.
Johnston, Hugh Haralson	Vanderbilt U., M. D., 1928	Mayo Clinic, Rochester, Minn.
Kanning, Frederick Richard	U. of Minn., M. B., 1930; M. D., 1931	Mineral Spgs. San., Cannon Falls, Minn.
Kehoe, Emmett Leroy	U. of Minn., M. B., 1931	University Hospital, Minneapolis, Minn.
Klein, Albert Daniel, Jr.	U. of Minn., M. B. and M. D., 1930	Rood Hospital, Chisholm, Minn.
Koelsche, Giles Alexander	Col. of Med. Evang., M. D., 1931	Mayo Clinic, Rochester, Minn.
Krueger, Emil Robert	U. of Minn., M. B., 1931	St. Mary's Hospital, Duluth, Minn.
Larsen, Frank William	U. of Minn., M. B., 1931	Ancker Hospital, St. Paul, Minn.
Lendrum, Frederick Crist	U. of Mich., M. D., 1930	Mayo Clinic, Rochester, Minn.
Lightbourn, Edgar Louis	U. of Minn., M. B., 1930	St. Mary's Hospital, Duluth, Minn.
Linner, Gunnar	U. of Minn., M. B., 1931	St. Mary's Hospital, Minneapolis, Minn.
Margoles, Louis	U. of Minn., M. B., 1929; M. D., 1931	935 Goodrich Ave., St. Paul, Minn.
Miller, Edmund Wallace	U. of Minn., M. B., 1931	St. Mary's Hospital, Minneapolis, Minn.
Mills, Stephen Dow	Columbia U., M. D., 1930	Mayo Clinic, Rochester, Minn.
Moris, Stanley William	U. of Minn., M. B., 1931	Ancker Hospital, St. Paul, Minn.
Ogden, James Cheston	U. of Iowa, M. D., 1930	Geneseo, Illinois.
Picha, Richard Henry	U. of Minn., M. B., 1931	St. Mary's Hospital, Minneapolis, Minn.
Quade, Raymond Henry	Northwestern U., M. B., 1929; M. D., 1930	Mayo Clinic, Rochester, Minn.
Roberts, Oliver William	Hah. Med. Col., Pa., M. D., 1930	143 E. Vine St., Owatonna, Minn.
Robins, Charles Russell, Jr.	Med. Col. of Va., M. D., 1929	Mayo Clinic, Rochester, Minn.
Rouse, John Joseph	U. of Iowa, M. D., 1930	Nopeming, Minn.
Sax, Simon Gudell	U. of Minn., M. B., 1931	General Hospital, Minneapolis, Minn.
Schneider, Paul Joseph	Loyola U., M. D., 1931	209 Juniper St., Brainerd, Minn.
Skibba, Joseph Philip	Marquette U., M. D., 1931	826 2nd Ave., Antigo, Wis.
Sperling, Louis	U. of Minn., M. B., 1930; M. D., 1931	614 Humboldt Ave. N., Minneapolis.
Thiessen, Norman William	Harvard U., M. D., 1930	Mayo Clinic, Rochester, Minn.
Trelstad, Bertram Lawrence	U. of Minn., M. B., 1931	306 S. 6th St., Moorhead, Minn.
Voldeng, Karl Edward	U. of Iowa, M. D., 1928	Mayo Clinic, Rochester, Minn.
Voris, Harold C.	Rush Med. Co., M. D., 1930	Mayo Clinic, Rochester, Minn.
Welsh, Ashton LeRoy	U. of Cincinnati, M. B., 1930; M. D., 1931	Mayo Clinic, Rochester, Minn.

BY RECIPROCITY

Emanuel, Karl William	U. of Wis., M. D., 1929	509 N. 47th Ave. W., Duluth, Minn.
Reff, Alan Randolph	U. of Neb., M. D., 1930	311 Union St., Minneapolis, Minn.
Stiles, Angie Gertrude	U. of Tex., M. D., 1929	Faculty Club, Northfield, Minn.

NATIONAL BOARD

Anderson, Ulysses Schuyler	U. of Minn., M. B., 1930; M. D., 1931	429 Union St. S. E., Minneapolis, Minn.
Carlson, Verne William	U. of Minn., M. B., 1930; M. D., 1931	2309 Bryant Ave. S., Minneapolis, Minn.
Hudson, George Edwin	Harvard U., M. D., 1926	515 Delaware St. S. E., Minneapolis.
Lester, Garra L.	U. of Buffalo, M. D., 1929	Mayo Clinic, Rochester, Minn.

